

REPORT No. 5
MAY, 2000

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This monthly report contains a comparison of Two-way Satellite Time Transfer (TW), Common-view Time Transfer (CV), and Carrier-Phase Time/Frequency Transfer (CP) data analyzed at USNO. Time transfer data is tabulated and analyzed in a one-point-per-day format for the list of timing labs given below. Because we currently process TW data only for those baselines which include USNO, not every baseline combination of these labs is included in this report.

AMC Colorado Springs, Colorado U.S.A
NPL Teddington, Middlesex, UK
PTB Braunschweig, Germany
USNO Washington, D.C. USA

HOW THE TABLES ARE CALCULATED

For each baseline, time-transfer data are collected from each of the TW, CV, and CP analysis groups at USNO. To each data time series, a one-day linear fit is made. From this fit, a value for time-transfer is selected which corresponds to an epoch at which a TW data point exists. For those days without TW data, the CP and CV time-transfer value is related to 12:00 UTC. Also, the RMS scatter about each linear fit is given in the table.

Following each table are graphs of TW-CV, TW-CP, and CV-CP differences. Error bars are drawn on each data point reflecting an RSS combination of the RMS values obtained from the linear fits to each TW, CV, and CP time series. Though the tables in each report will consist of one month of data, the graphs will be cumulative until one year of data is collected, after which the graphs will consist of a one-year moving window.

Basic hardware configurations at each site are provided at the end of the report. Because some sites may have more than one receiver/modem, a separate designation has been specified for each receiver combination. For example, the report includes 8 designations for USNO (e.g. USNO(a), USNO(b), ..., USNO(h)) where each designation corresponds to a different combination of CV, CP, and TW receivers/modems. Since each designation represents a combination of TW, CV, and CP receivers/modems, these hardware configuration tables will be somewhat redundant. For example, USNO(a) and USNO(b) differ only in the choice of CV receiver (i.e. the TW and CP hardware are the same for USNO(a) and USNO(b)).

NOTE: Currently, the following site combinations are such that CP receivers are NOT on the same reference standard as the CV and TW hardware: USNO(a), USNO(b), PTB, TUG. However, the USNO(a) and USNO(b) clock estimates are re-referenced to the same timing reference as the CV and TW hardware using an optic fiber

link. Also, CP clock estimates at PTB are referenced to the same timing reference as CV and TW data using data from a SRS620 time-interval counter.

ADJUSTMENTS TO THE DATA

Each table contains a column marked ADJUSTMENTS which indicate any manual adjustments made to the data. For example, we currently remove arbitrary values from the non-calibrated carrier-phase systems to account for receiver resets which can occur for example when a receiver's power is cycled. In particular, first differences of the carrier-phase estimates are taken and spikes larger than 10ns (accounting for large data gaps) are flagged as outliers. Flagged values are then replaced by linearly interpolating adjacent first differences. Finally, the series of first differences is then integrated back into the time domain by choosing an initial arbitrary constant so that all CP values are 0.000 on January 1, 2000. For these carrier-phase adjustments, the ADJUSTMENTS column represents the difference between the raw and the "cleaned" CP data, and is therefore a measure of the individual jumps removed. This is clearly not the optimal method of removing such jumps since some carrier-phase systems track a 1-pps input from the local reference which can be used to re-reference the receiver's internal clock to the external reference when such resets occur. However, since we do not have available such 1-pps for most of the non-USNO sites, we have opted instead to remain consistent and remove carrier-phase jumps according to this very simplistic method.

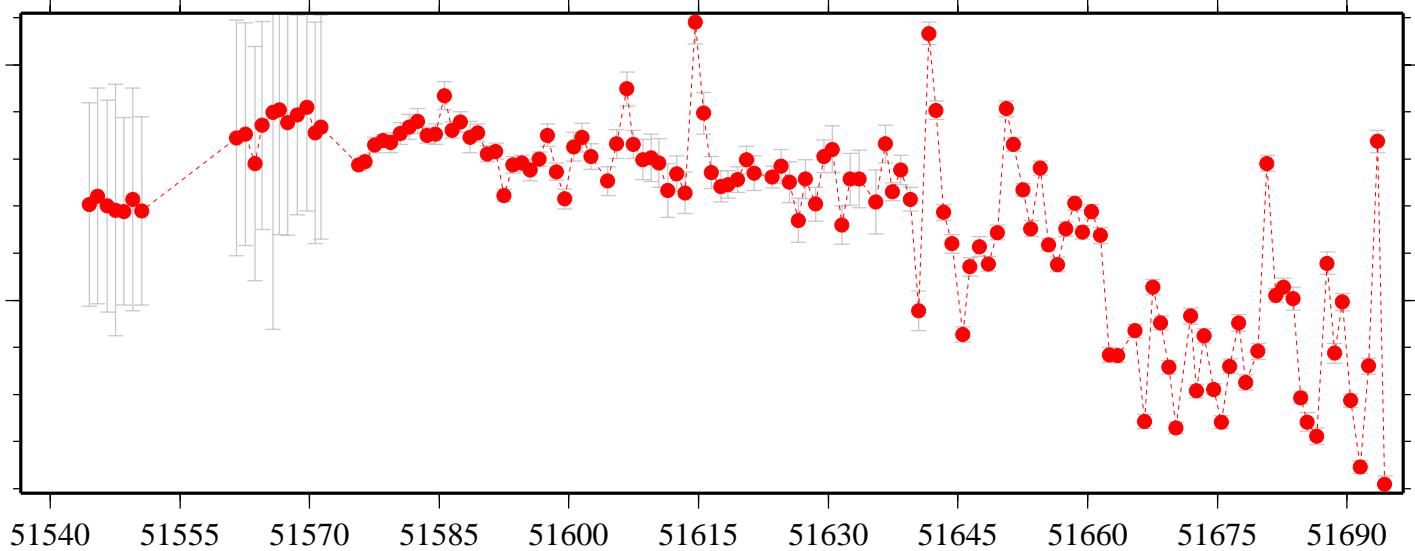
USNO(a) - AMC

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.4719	0.4	-50.7			51.1			0.1	0.3	
51666.5973	0.1	-47.0			47.1			0.1	0.3	
51667.5774	0.5	-52.6	2.190		53.1	-1.7	-54.8	0.1	0.3	0.004
51668.4740	0.4	-51.1	2.133	+ 478.146CP	51.5	-1.7	-53.2	0.1	0.3	0.004
51669.3889	0.8	-48.7	2.161	+ 3764.653CP	49.5	-1.4	-50.9	0.1	0.3	0.004
51670.2219	1.1	-45.7	2.147		46.8	-1.1	-47.9	0.1	0.2	0.004
51671.9101	1.3	-50.5	1.907		51.8	-0.6	-52.4	0.2	0.3	0.004
51672.5969	1.4	-47.1	2.022		48.5	-0.7	-49.1	0.1	0.3	0.004
51673.4518	1.5	-49.4	2.143		50.9	-0.7	-51.6	0.1	0.3	0.003
51674.6177	1.6	-46.9	2.308		48.5	-0.7	-49.3	0.1	0.2	0.003
51675.4934	1.4	-45.6	2.343	+ 1026.307CP	47.1	-0.9	-48.0	0.1	0.3	0.005
51676.4726	1.4	-48.1			49.5			0.1	0.3	
51677.4934	1.0	-50.5			51.5			0.1	0.3	
51678.2639	0.6	-48.3			48.8			0.2	0.3	
51679.7223	1.5	-48.8	3.221	+ 1515.064CP	50.2	-1.8	-52.0	0.2	0.3	0.003
51680.7636	1.6	-57.0	3.507	- 4497.301CP	58.6	-1.9	-60.5	0.1	0.4	0.001
51681.7427	1.8	-50.9	2.443		52.7	-0.6	-53.4	0.1	0.3	0.004
51682.6806	1.7	-51.4	2.940		53.1	-1.3	-54.3	0.1	0.4	0.003
51683.7851	1.5	-51.0	3.628		52.6	-2.1	-54.6	0.4	0.3	0.013
51684.6587	1.6	-46.5	3.875	- 1368.784CP	48.2	-2.2	-50.4	0.1	0.2	0.005
51685.3889	1.7	-45.3	4.249		47.1	-2.5	-49.6	0.1	0.4	0.004
51686.4729	1.6	-44.8	4.611		46.4	-3.0	-49.4	0.1	0.4	0.003
51687.7216	1.8	-52.4			54.2			0.1	0.5	
51688.5774	2.2	-47.9			50.1			0.1	0.4	
51689.4511	1.6	-50.8			52.4			0.1	0.4	
51690.4511	1.8	-46.3			48.0			0.1	0.3	
51691.5344	0.7	-44.4			45.1			0.1	0.3	
51692.4719	0.7	-48.9			49.6			0.1	0.4	
51693.5136	0.4	-59.2			59.6			0.1	0.5	
51694.3893	0.5	-43.8			44.3			0.1	0.3	

The ADJUSTMENTS column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

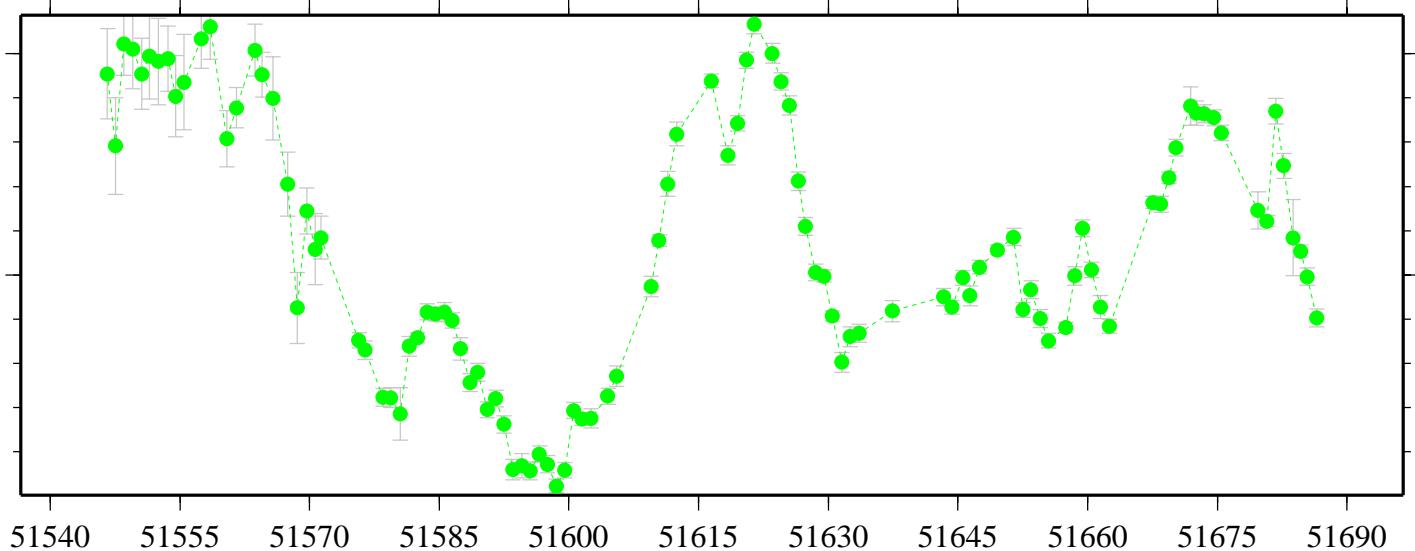
USNO(a)-AMC (TW-CV)

NANOSECONDS



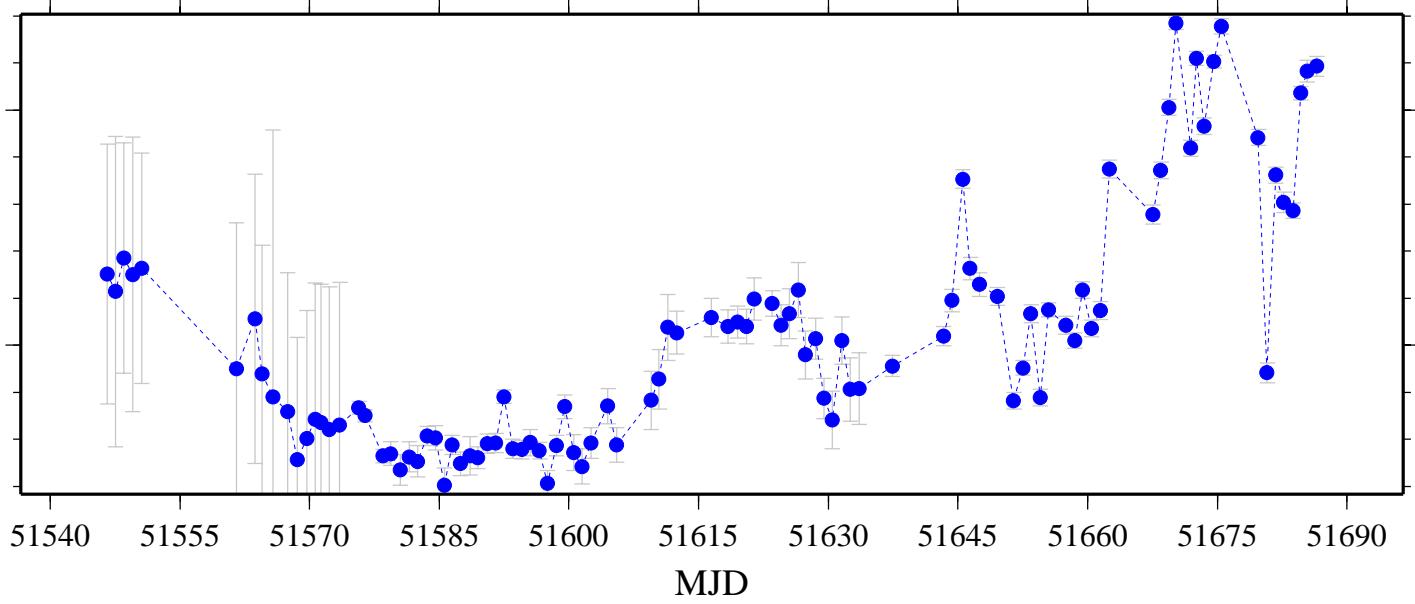
USNO(a)-AMC (TW-CP)

NANOSECONDS



USNO(a)-AMC (CV-CP)

NANOSECONDS



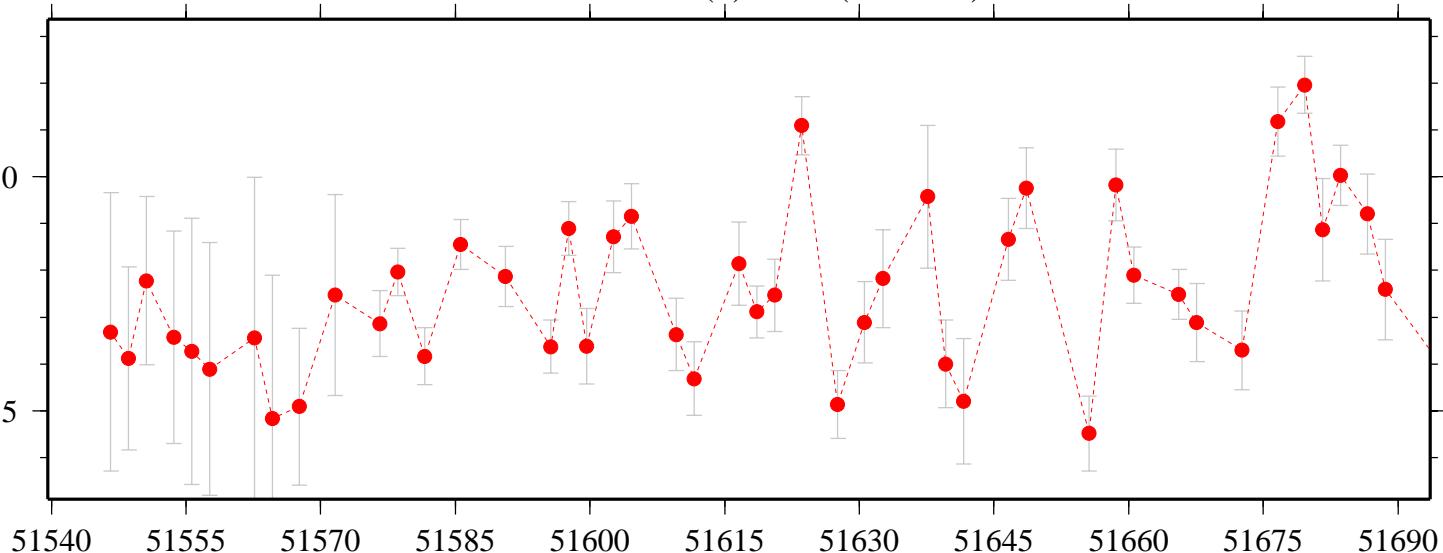
USNO(b) - NPL

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.6098	-1.1	4.7			-5.8			0.7	1.0	
51666.5000		8.4							0.9	
51667.6097	-0.3	6.9	-94.675		-7.2	94.4	101.6	0.7	1.8	0.006
51668.5000		4.9	-94.974	+ 478.099CP			99.9		1.7	0.008
51669.5000		-3.7	-95.571				91.9		1.4	0.004
51670.5000		4.1	-95.908				100.0		0.9	0.006
51671.5000		4.0	-95.925				99.9		1.5	0.009
51672.6097	-2.2	6.4	-95.364		-8.5	93.2	101.7	0.8	1.7	0.008
51673.5000		-5.0	-95.106				90.1		1.2	0.008
51674.5000		9.5	-95.209				104.7		1.3	0.005
51675.5000		3.4	-95.173	+ 1026.713CP			98.5		1.1	0.006
51676.6097	1.0	-1.7			2.7			1.1	1.3	
51677.5000		1.9							1.7	
51678.5000		1.7							1.3	
51679.6097	-1.5	-6.0	-95.556	+ 1515.349CP	4.5	94.1	89.6	1.0	1.0	0.005
51680.5000		1.1	-96.015				97.1		1.5	0.008
51681.6097	0.6	3.2	-96.200		-2.6	96.8	99.4	1.0	2.3	0.005
51682.5000		5.7	-95.648	- 85700.311CP			101.3		1.7	0.004
51683.6097	0.9	0.8	-95.210	+ 85698.435CP	0.1	96.1	96.0	0.9	1.2	0.012
51684.5000		0.1	-94.911	- 1368.756CP			95.0		1.2	0.006
51685.5000		5.0	-94.456				99.5		1.6	0.006
51686.6097	0.9	2.8	-93.878		-1.8	94.8	96.6	1.1	1.6	0.004
51687.5000		1.7							0.9	
51688.6097	1.5	7.0			-5.5			1.5	2.0	
51689.5000		3.6							1.5	
51690.5000		4.1							1.3	
51691.5000		5.2							1.0	
51692.5000		8.1							1.4	
51693.6097	2.5	11.0			-8.5			0.9	1.6	
51694.5000		9.3							1.0	

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

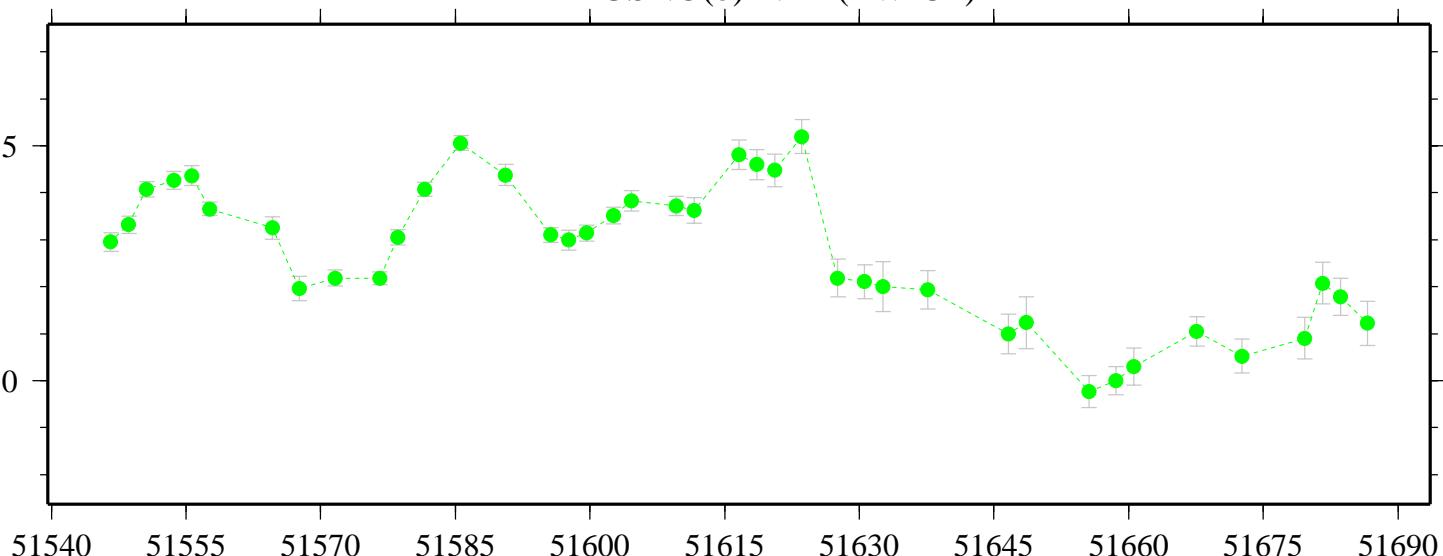
USNO(b)-NPL (TW-CV)

NANOSECONDS



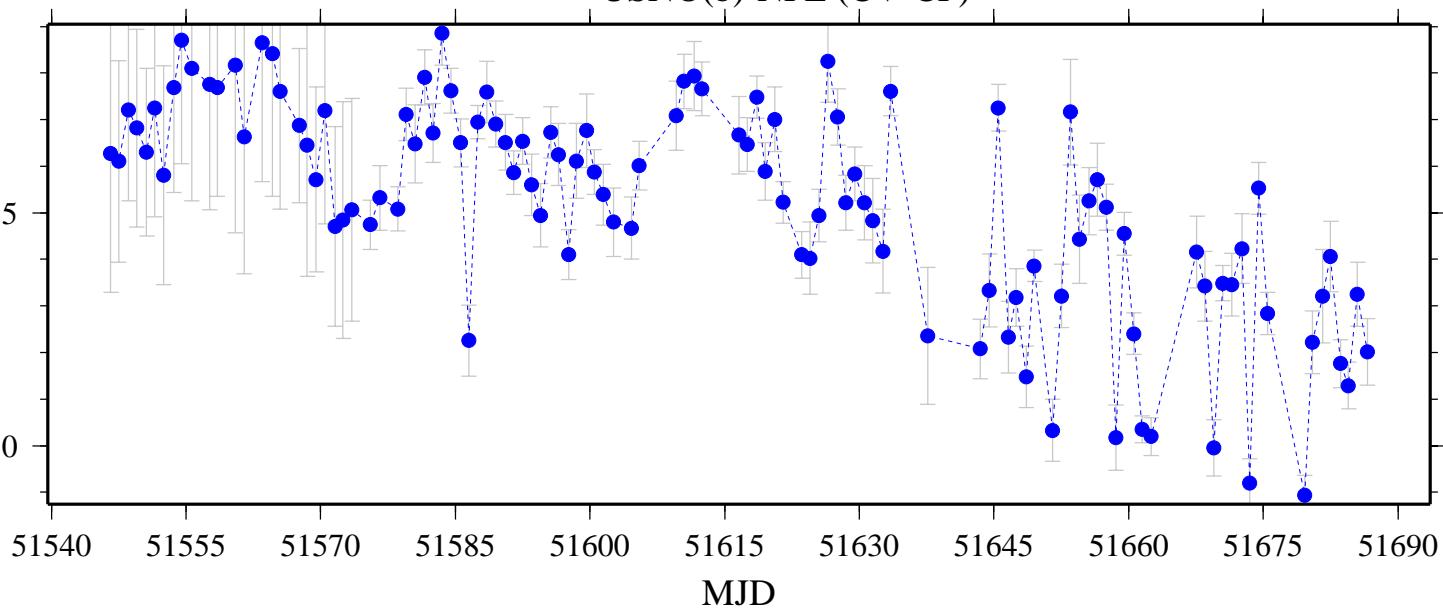
USNO(b)-NPL (TW-CP)

NANOSECONDS



USNO(b)-NPL (CV-CP)

NANOSECONDS



x and y-axes are same scale

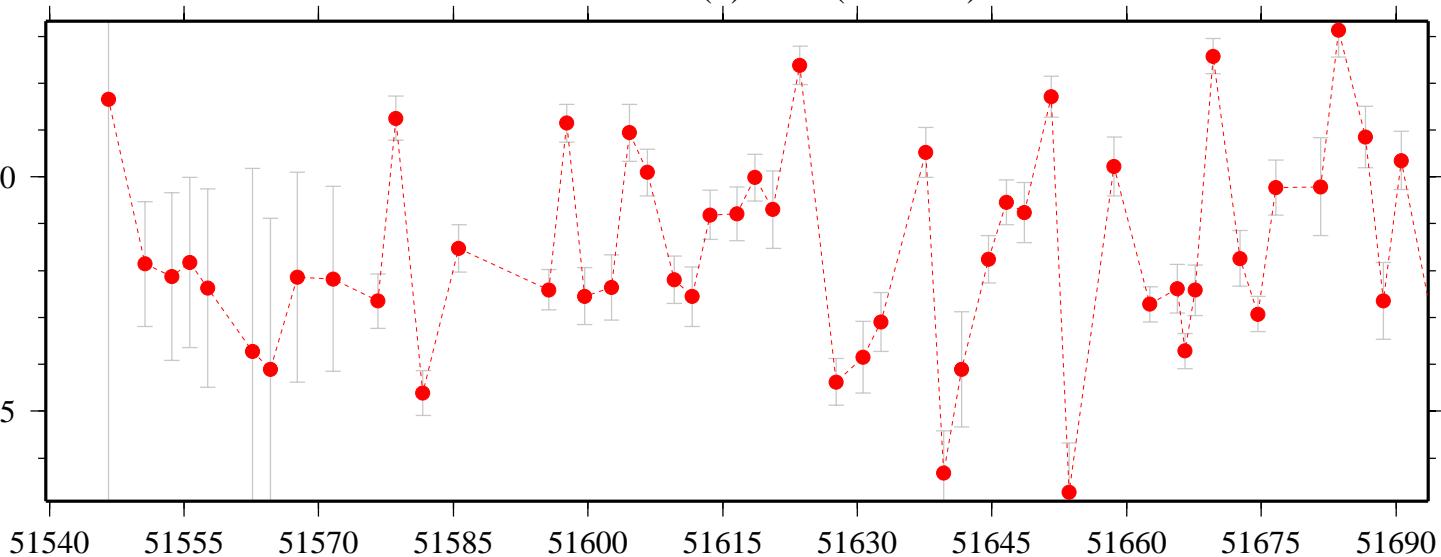
USNO(b) - PTB

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.6524	4.5	10.5			-6.0			0.0	1.3	
51666.4785	5.7	15.0			-9.3			0.0	0.9	
51667.6160	5.5	11.6	42.582		-6.0	-37.0	-31.0	0.5	1.2	0.021
51668.5000		11.4	41.760	+ 478.153CP			-30.3		1.2	0.022
51669.6160	6.3	-0.1	40.185		6.4	-33.9	-40.3	0.6	0.7	0.024
51670.5000		10.2	39.345				-29.1		1.0	0.016
51671.5000		8.5	38.613				-30.2		0.8	0.019
51672.6160	1.6	6.0			-4.3			0.7	1.3	
51673.5000		-2.4	35.665				-38.1		1.3	0.027
51674.6160	0.6	7.9	35.501		-7.3	-34.9	-27.6	0.6	0.7	0.028
51675.5000		3.3	34.782	+ 1026.822CP			-31.5		1.0	0.016
51676.6160	-0.6	-0.1			-0.6			0.6	1.3	
51677.5000		1.9							1.6	
51678.5000		1.1							1.2	
51679.5000		-3.8	33.321	+ 1516.973CP			-37.1		0.9	0.019
51680.5000		-0.5	33.625				-34.2		1.5	0.014
51681.6160	-0.9	-0.3	32.981		-0.5	-33.8	-33.3	0.6	2.5	0.021
51682.5000		-0.5	34.105				-34.6		1.3	0.034
51683.6160	-0.2	-8.1	32.158		7.8	-32.4	-40.2	0.6	1.3	0.021
51684.5000		-5.0	33.665	- 1368.808CP			-38.7		1.3	0.014
51685.5000		2.5	35.331				-32.8		1.8	0.025
51686.6160	0.5	-1.6	35.256		2.1	-34.8	-36.9	0.7	1.5	0.012
51687.5000		-1.5							1.2	
51688.6160	-3.4	3.2			-6.6			0.6	2.0	
51689.5000		0.4							1.6	
51690.6160	-1.3	-2.2			0.9			0.6	1.5	
51691.5000		-1.7							0.9	
51692.5000		1.3							1.0	
51693.6160	-5.0	1.6			-6.6			0.5	1.3	
51694.5000		0.7							0.8	

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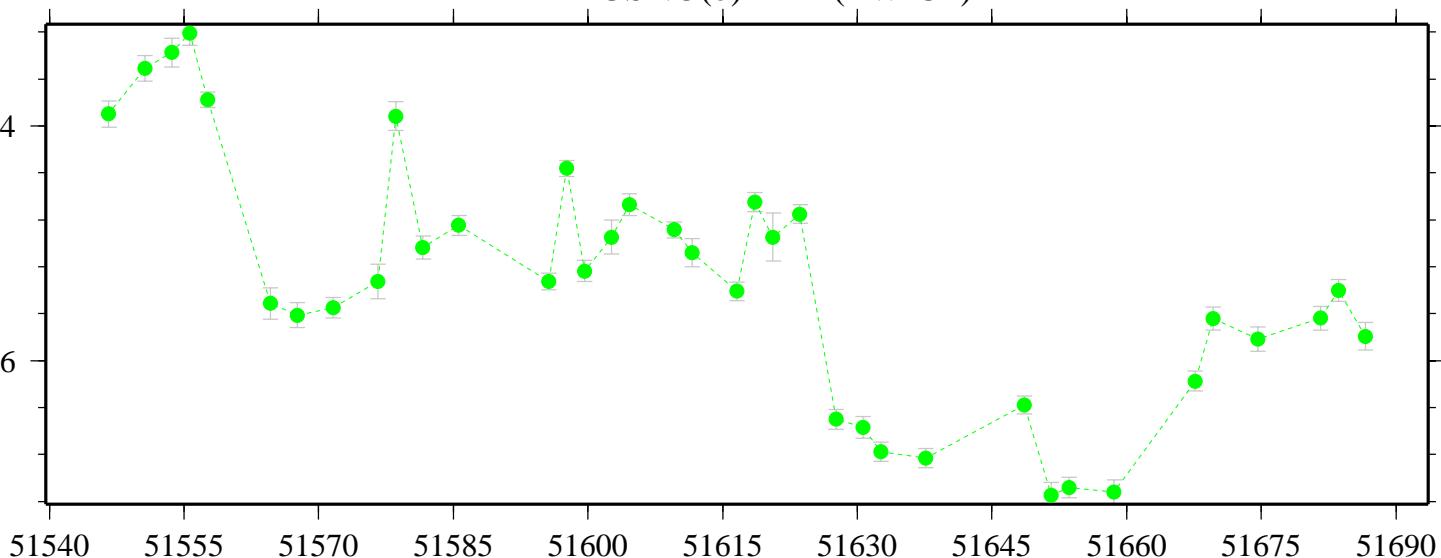
USNO(b)-PTB (TW-CV)

NANOSECONDS



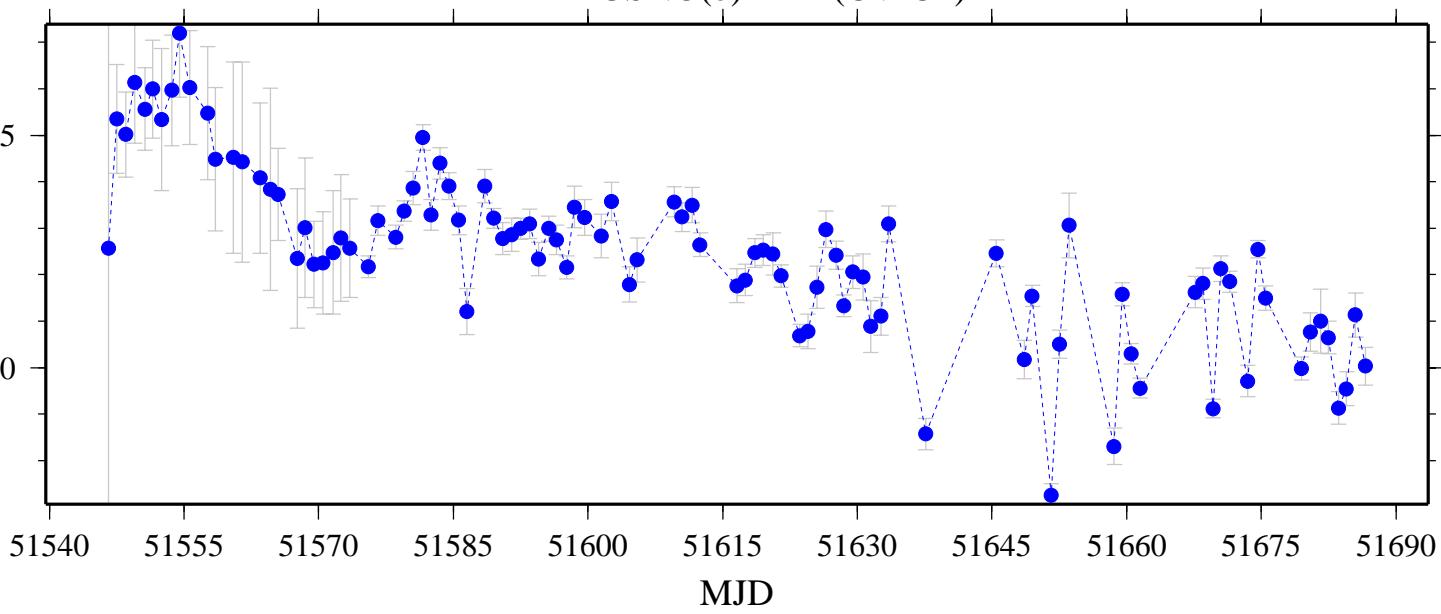
USNO(b)-PTB (TW-CP)

NANOSECONDS



USNO(b)-PTB (CV-CP)

NANOSECONDS



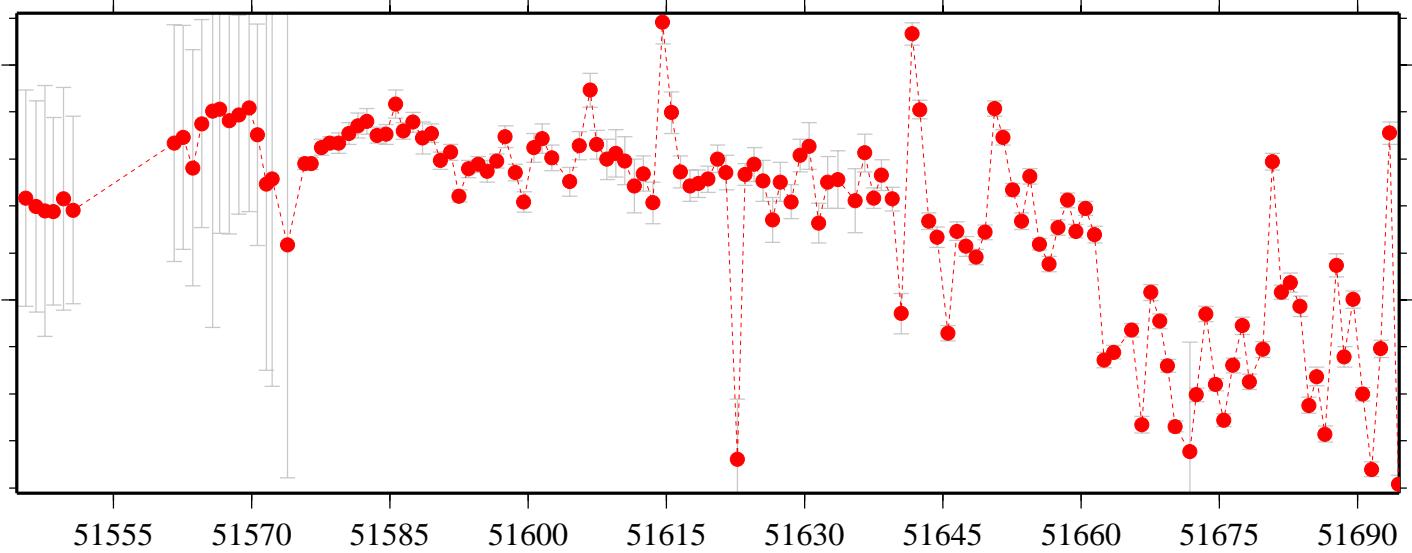
USNO(c) - AMC

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.4719	0.4	-50.7	-6.314	- 0.024CP	51.1	6.7	-44.4	0.1	0.3	0.020
51666.5768	-0.1	-47.0			46.9			0.2	0.3	
51667.5559	0.5	-52.4	-1.535		52.8	2.0	-50.8	0.1	0.3	0.005
51668.4955	0.4	-51.2	-1.193		51.5	1.6	-50.0	0.1	0.3	0.004
51669.3889	0.8	-48.7	-1.141	+ 3763.383CP	49.6	1.9	-47.6	0.1	0.3	0.008
51670.2219	1.1	-45.7	-1.124		46.8	2.2	-44.6	0.1	0.2	0.005
51671.7851	-3.8	-49.5	-0.763		45.7	-3.1	-48.8	4.9	0.3	0.003
51672.5136	1.3	-46.9	-1.385		48.3	2.7	-45.5	0.2	0.3	0.003
51673.5136	1.3	-50.6	-1.982		51.9	3.2	-48.6	0.2	0.3	0.003
51674.5983	1.6	-47.1	-1.420		48.7	3.0	-45.7	0.1	0.2	0.004
51675.4934	1.5	-45.6	-1.082		47.1	2.6	-44.5	0.1	0.3	0.004
51676.4726	1.4	-48.1	-0.902		49.6	2.3	-47.2	0.1	0.3	0.003
51677.4934	0.9	-50.5	-0.961		51.3	1.8	-49.5	0.2	0.3	0.006
51678.2639	0.5	-48.3	-0.728		48.8	1.3	-47.6	0.2	0.3	0.004
51679.7018	1.6	-48.7			50.3			0.2	0.3	
51680.7636	1.7	-57.0	-0.252	- 4498.410CP	58.7	1.9	-56.7	0.1	0.4	0.000
51681.7219	2.0	-50.9	-1.122		52.8	3.1	-49.8	0.2	0.3	0.003
51682.7017	1.5	-51.8	-2.951		53.3	4.5	-48.8	0.2	0.4	0.004
51683.7639	1.3	-50.9	-2.792		52.2	4.1	-48.1	0.4	0.3	0.004
51684.6802	1.2	-46.6	-1.874		47.8	3.0	-44.7	0.3	0.2	0.003
51685.5146	1.7	-47.3	-1.332		49.1	3.1	-46.0	0.1	0.4	0.002
51686.4729	1.7	-44.8	-1.033		46.5	2.7	-43.8	0.1	0.4	0.002
51687.7011	1.9	-52.2	-1.047	+ 1026.527CP	54.0	2.9	-51.1	0.1	0.5	0.003
51688.5559	2.2	-47.8	-0.997		49.9	3.2	-46.8	0.1	0.4	0.003
51689.4723	1.6	-50.9	-1.082		52.5	2.7	-49.9	0.1	0.4	0.004
51690.5136	1.7	-46.6			48.3			0.1	0.3	
51691.5344	0.5	-44.4	-1.303		44.9	1.8	-43.1	0.2	0.3	0.003
51692.5143	0.6	-49.7	-1.460		50.3	2.0	-48.3	0.1	0.4	0.002
51693.4927	0.4	-59.5	-1.506	- 391.499CP	60.0	1.9	-58.0	0.1	0.5	0.004
51694.4511	0.3	-44.0	-1.785		44.3	2.1	-42.2	0.2	0.3	0.003

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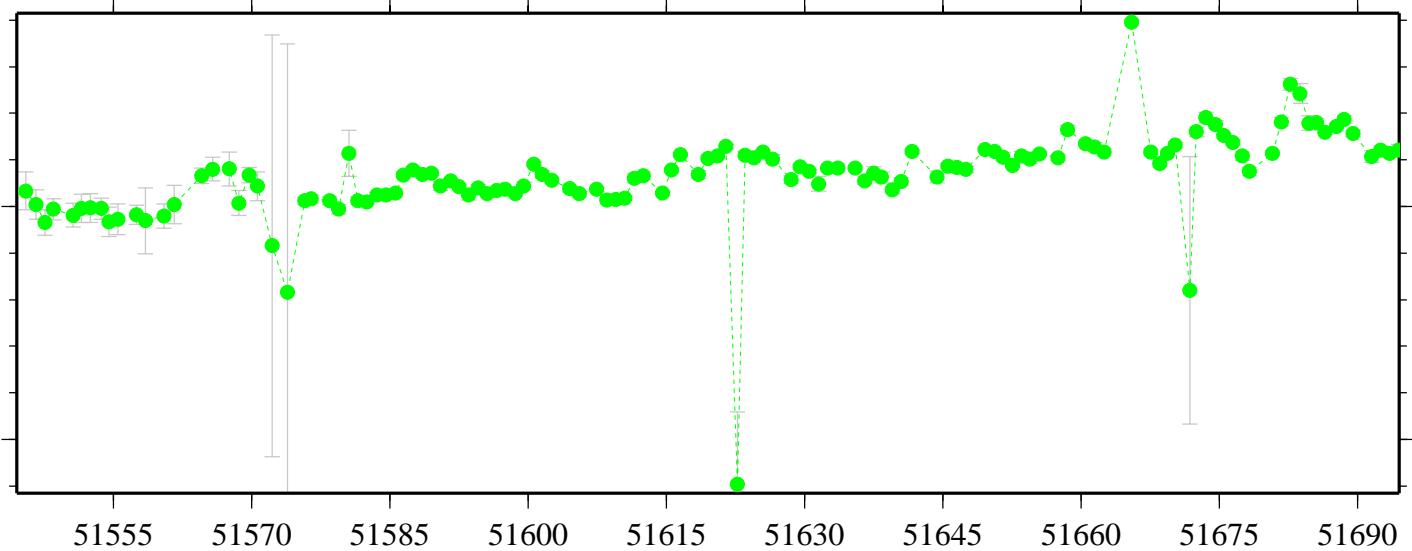
USNO(c)-AMC (TW-CV)

NANOSECONDS



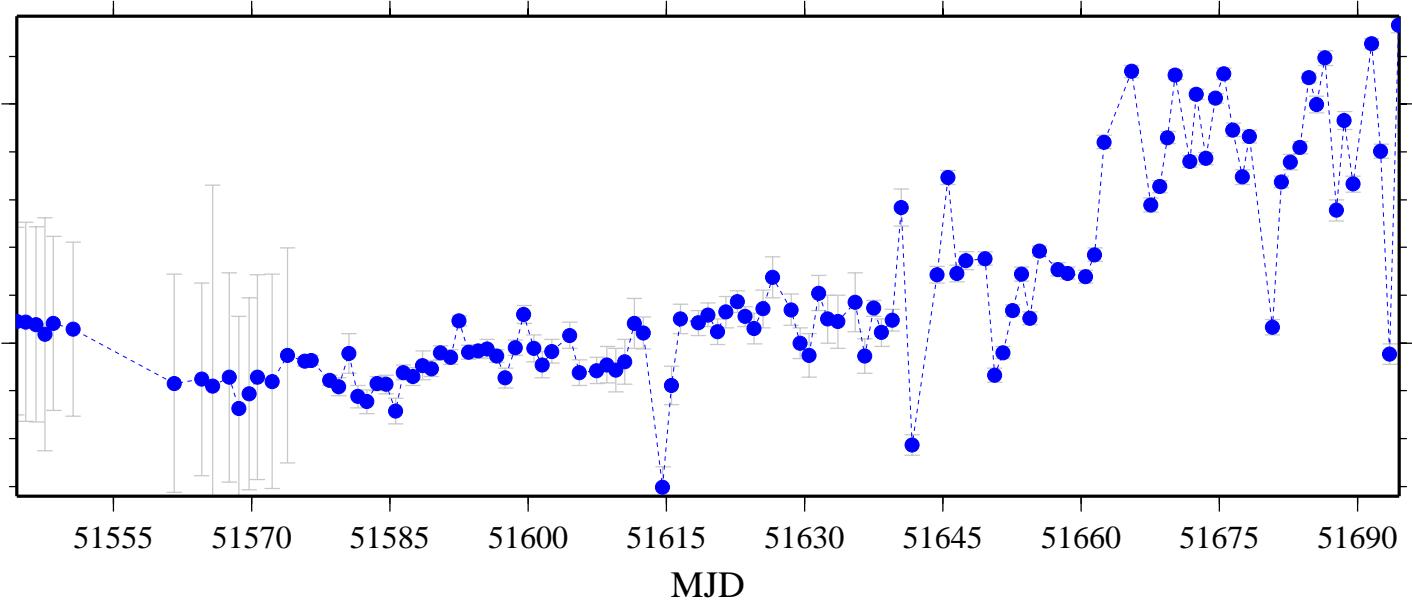
USNO(c)-AMC (TW-CP)

NANOSECONDS



USNO(c)-AMC (CV-CP)

NANOSECONDS



USNO(d) - NPL

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.6098	-1.1	4.7	-96.672		-5.8	95.6	101.3	0.7	1.0	0.008
51666.5000		8.4	-97.160				105.5		0.9	0.006
51667.6097	-0.3	6.9	-96.858		-7.2	96.6	103.7	0.7	1.8	0.006
51668.5000		4.9	-97.038				101.9		1.7	0.006
51669.5000		-3.7	-97.120				93.4		1.4	0.006
51670.5000		4.1	-97.098				101.2		0.9	0.008
51671.5000		4.0	-96.436				100.5		1.5	0.010
51672.6097	-2.2	6.4	-95.831		-8.5	93.7	102.2	0.8	1.7	0.007
51673.5000		-5.0	-95.714				90.8		1.2	0.007
51674.5000		9.5	-95.885				105.4		1.3	0.005
51675.5000		3.4	-95.903				99.3		1.1	0.006
51676.6097	1.0	-1.7	-96.470		2.7	97.5	94.8	1.1	1.3	0.005
51677.5000		1.9	-96.602				98.5		1.7	0.007
51678.5000		1.7	-96.664				98.3		1.3	0.007
51679.6097	-1.5	-6.0			4.5			1.0	1.0	
51680.5000		1.1	-96.668				97.8		1.5	0.010
51681.6097	0.6	3.2	-97.152		-2.6	97.7	100.3	1.0	2.3	0.006
51682.5000		5.7	-97.010	- 85700.758CP			102.7		1.7	0.004
51683.6097	0.9	0.8	-97.241	+ 85698.623CP	0.1	98.1	98.1	0.9	1.2	0.005
51684.5000		0.1	-96.651				96.7		1.2	0.005
51685.5000		5.0	-96.328				101.4		1.6	0.005
51686.6097	0.9	2.8	-96.278		-1.8	97.2	99.0	1.1	1.6	0.004
51687.5000		1.7	-96.038				97.7		0.9	0.004
51688.6097	1.5	7.0	-95.699		-5.5	97.2	102.7	1.5	2.0	0.005
51689.5000		3.6	-95.454				99.1		1.5	0.004
51690.5000		4.1							1.3	
51691.5000		5.2	-94.849				100.1		1.0	0.004
51692.5000		8.1	-94.380				102.4		1.4	0.004
51693.6097	2.5	11.0	-94.009		-8.5	96.5	105.0	0.9	1.6	0.004
51694.5000		9.3	-94.308				103.6		1.0	0.007

The ADJUSTMENTS column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

USNO(d)-NPL (TW-CV)

NANOSECONDS

0.0
-11.5

51555 51570 51585 51600 51615 51630 51645 51660 51675 51690

USNO(d)-NPL (TW-CP)

NANOSECONDS

103.5
92.0

51555 51570 51585 51600 51615 51630 51645 51660 51675 51690

USNO(d)-NPL (CV-CP)

NANOSECONDS

103.5
92.0

51555 51570 51585 51600 51615 51630 51645 51660 51675 51690

MJD

x and y-axes are same scale

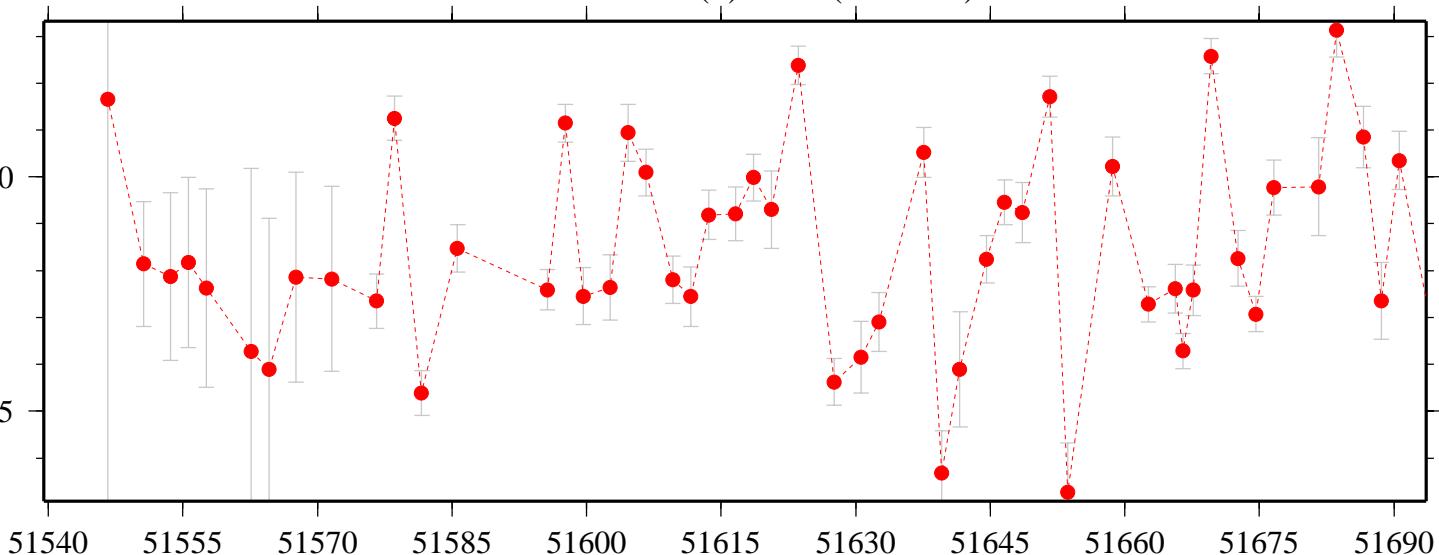
USNO(d) - PTB

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.6524	4.5	10.5	40.091	- 0.515CP	-6.0	-35.6	-29.6	0.0	1.3	0.025
51666.4785	5.7	15.0	40.295		-9.3	-34.6	-25.3	0.0	0.9	0.019
51667.6160	5.5	11.6	39.159		-6.0	-33.6	-27.6	0.5	1.2	0.021
51668.5000		11.4	38.232				-26.8		1.2	0.021
51669.6160	6.3	-0.1	37.118		6.4	-30.8	-37.2	0.6	0.7	0.026
51670.5000		10.2	36.943				-26.7		1.0	0.018
51671.5000		8.5	36.877				-28.4		0.8	0.018
51672.6160	1.6	6.0			-4.3			0.7	1.3	
51673.5000		-2.4	34.739				-37.1		1.3	0.027
51674.6160	0.6	7.9	34.684		-7.3	-34.1	-26.8	0.6	0.7	0.028
51675.5000		3.3	34.210				-30.9		1.0	0.013
51676.6160	-0.6	-0.1	33.432		-0.6	-34.1	-33.5	0.6	1.3	0.023
51677.5000		1.9	30.795				-28.9		1.6	0.014
51678.5000		1.1	29.690				-28.6		1.2	0.013
51679.5000		-3.8							0.9	
51680.5000		-0.5	30.094				-30.6		1.5	0.016
51681.6160	-0.9	-0.3	29.086		-0.5	-29.9	-29.4	0.6	2.5	0.019
51682.5000		-0.5	29.796				-30.3		1.3	0.034
51683.6160	-0.2	-8.1	27.675		7.8	-27.9	-35.7	0.6	1.3	0.023
51684.5000		-5.0	29.320				-34.4		1.3	0.015
51685.5000		2.5	30.751				-28.2		1.8	0.023
51686.6160	0.5	-1.6	30.080		2.1	-29.6	-31.7	0.7	1.5	0.014
51687.5000		-1.5	28.567				-30.0		1.2	0.024
51688.6160	-3.4	3.2	29.756		-6.6	-33.2	-26.5	0.6	2.0	0.025
51689.5000		0.4							1.6	
51690.6160	-1.3	-2.2			0.9			0.6	1.5	
51691.5000		-1.7							0.9	
51692.5000		1.3							1.0	
51693.6160	-5.0	1.6			-6.6			0.5	1.3	
51694.5000		0.7							0.8	

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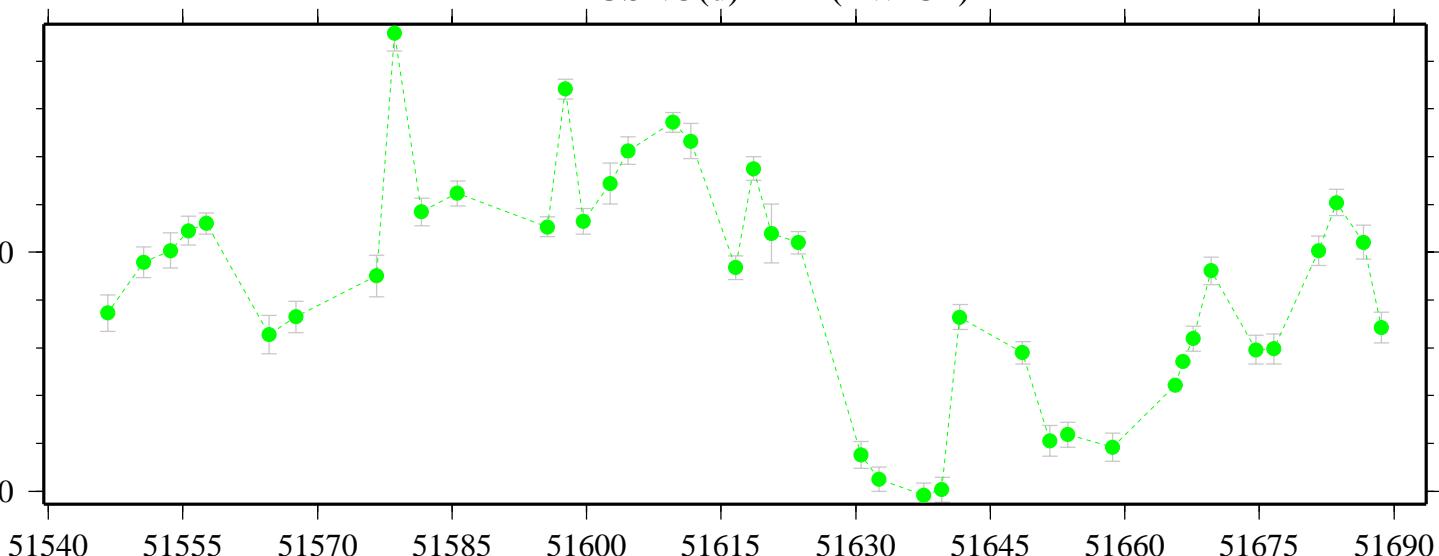
USNO(d)-PTB (TW-CV)

NANOSECONDS



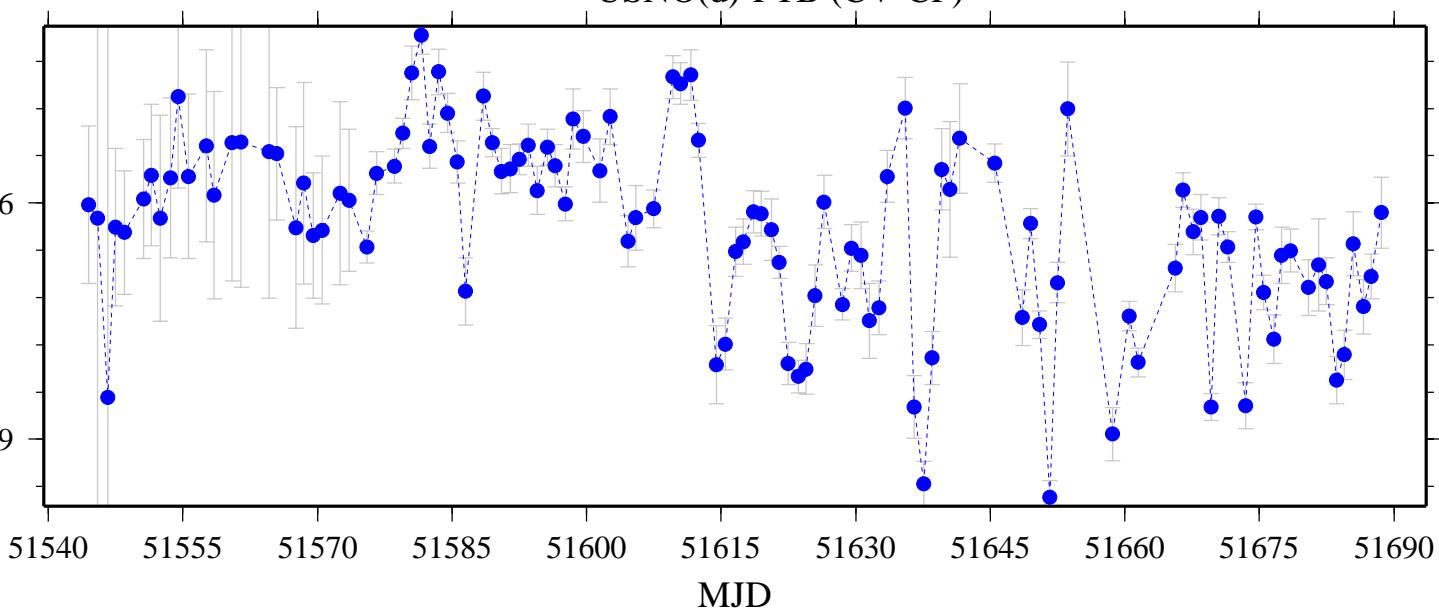
USNO(d)-PTB (TW-CP)

NANOSECONDS



USNO(d)-PTB (CV-CP)

NANOSECONDS



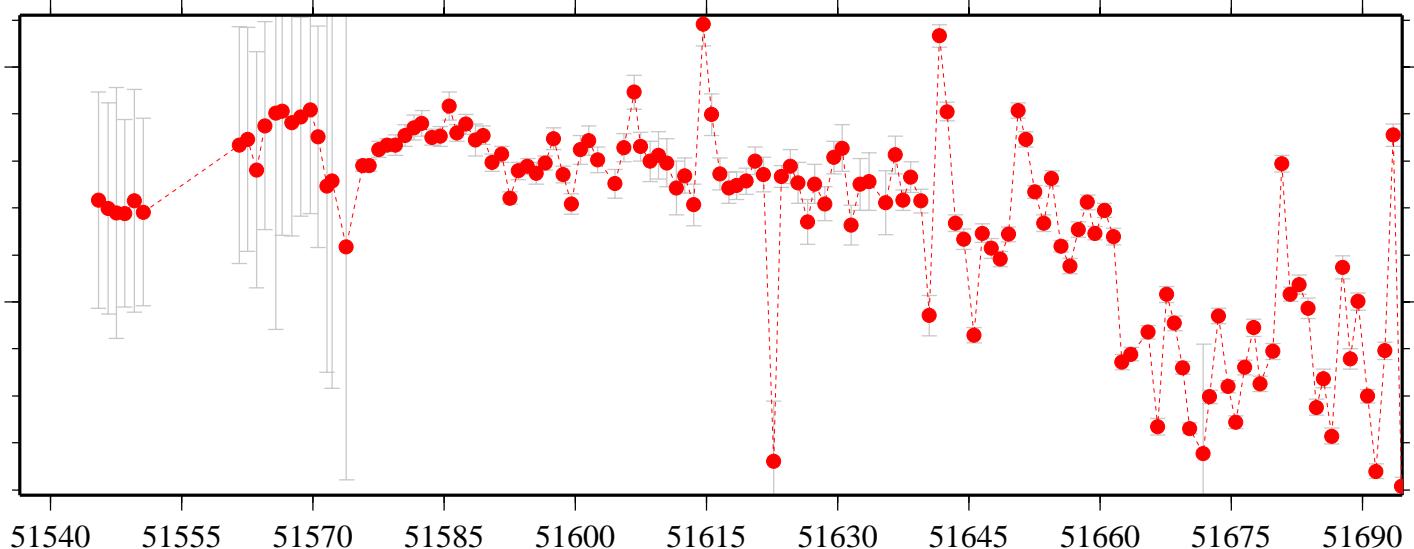
USNO(e) - AMC

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.4719	0.4	-50.7	3.517	+ 4.982CP	51.1	-3.1	-54.3	0.1	0.3	0.030
51666.5768	-0.1	-47.0			46.9			0.2	0.3	
51667.5559	0.5	-52.4	8.246		52.8	-7.8	-60.6	0.1	0.3	0.005
51668.4955	0.4	-51.2	8.285		51.5	-7.9	-59.5	0.1	0.3	0.005
51669.3889	0.8	-48.7	8.506	+ 3764.590CP	49.6	-7.7	-57.3	0.1	0.3	0.008
51670.2219	1.1	-45.7	8.817		46.8	-7.7	-54.5	0.1	0.2	0.005
51671.7851	-3.8	-49.5	8.821		45.7	-12.6	-58.4	4.9	0.3	0.004
51672.5136	1.3	-46.9	8.857		48.3	-7.5	-55.8	0.2	0.3	0.004
51673.5136	1.3	-50.6	8.926		51.9	-7.7	-59.5	0.2	0.3	0.007
51674.5983	1.6	-47.1	9.228		48.7	-7.7	-56.4	0.1	0.2	0.004
51675.4934	1.5	-45.6	9.428		47.1	-7.9	-55.1	0.1	0.3	0.005
51676.4726	1.4	-48.1	9.340		49.6	-7.9	-57.5	0.1	0.3	0.004
51677.4934	0.9	-50.5	9.221		51.3	-8.3	-59.7	0.2	0.3	0.005
51678.2639	0.5	-48.3	9.542		48.8	-9.0	-57.8	0.2	0.3	0.004
51679.7018	1.6	-48.7	10.068		50.3	-8.5	-58.8	0.2	0.3	0.005
51680.7636	1.7	-57.0	10.558	- 4497.353CP	58.7	-8.9	-67.6	0.1	0.4	0.004
51681.7219	2.0	-50.9	9.208		52.8	-7.2	-60.1	0.2	0.3	0.004
51682.7017	1.5	-51.8	9.183		53.3	-7.7	-60.9	0.2	0.4	0.004
51683.7639	1.3	-50.9	10.771		52.2	-9.4	-61.7	0.4	0.3	0.026
51684.6802	1.2	-46.6	11.445		47.8	-10.3	-58.1	0.3	0.2	0.004
51685.5146	1.7	-47.3	11.567		49.1	-9.8	-58.9	0.1	0.4	0.003
51686.4729	1.7	-44.8	11.586		46.5	-9.9	-56.4	0.1	0.4	0.002
51687.7011	1.9	-52.2			54.0			0.1	0.5	
51688.5559	2.2	-47.8			49.9			0.1	0.4	
51689.4723	1.6	-50.9			52.5			0.1	0.4	
51690.5136	1.7	-46.6			48.3			0.1	0.3	
51691.5344	0.5	-44.4			44.9			0.2	0.3	
51692.5143	0.6	-49.7			50.3			0.1	0.4	
51693.4927	0.4	-59.5			60.0			0.1	0.5	
51694.4511	0.3	-44.0			44.3			0.2	0.3	

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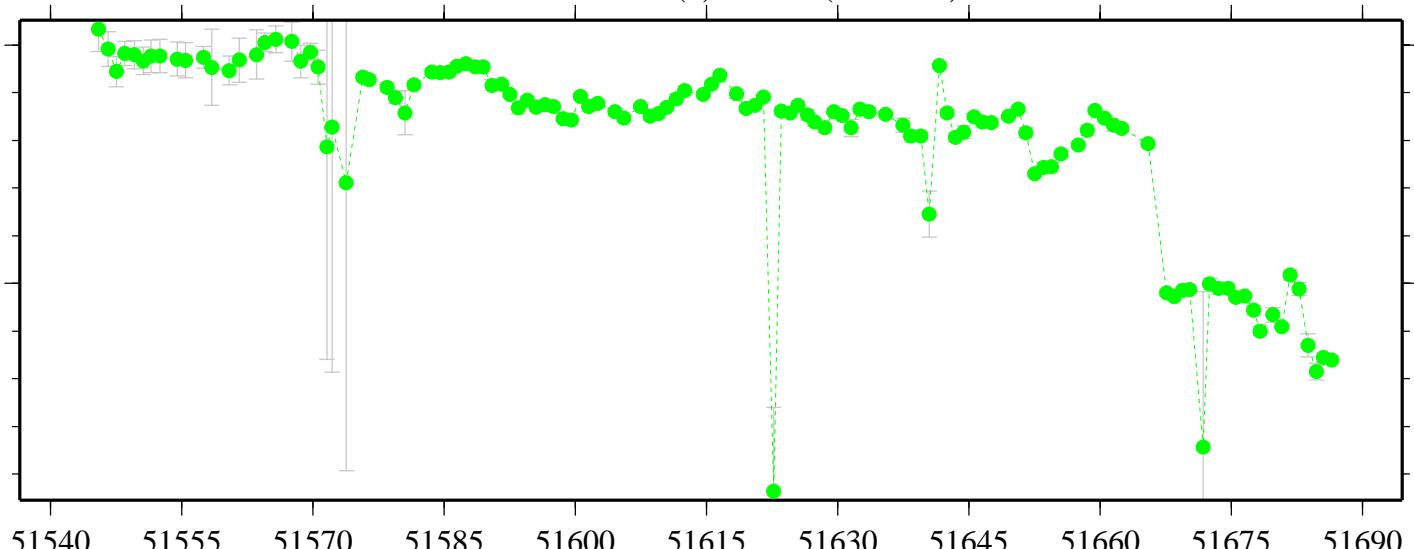
USNO(e)-AMC (TW-CV)

NANOSECONDS



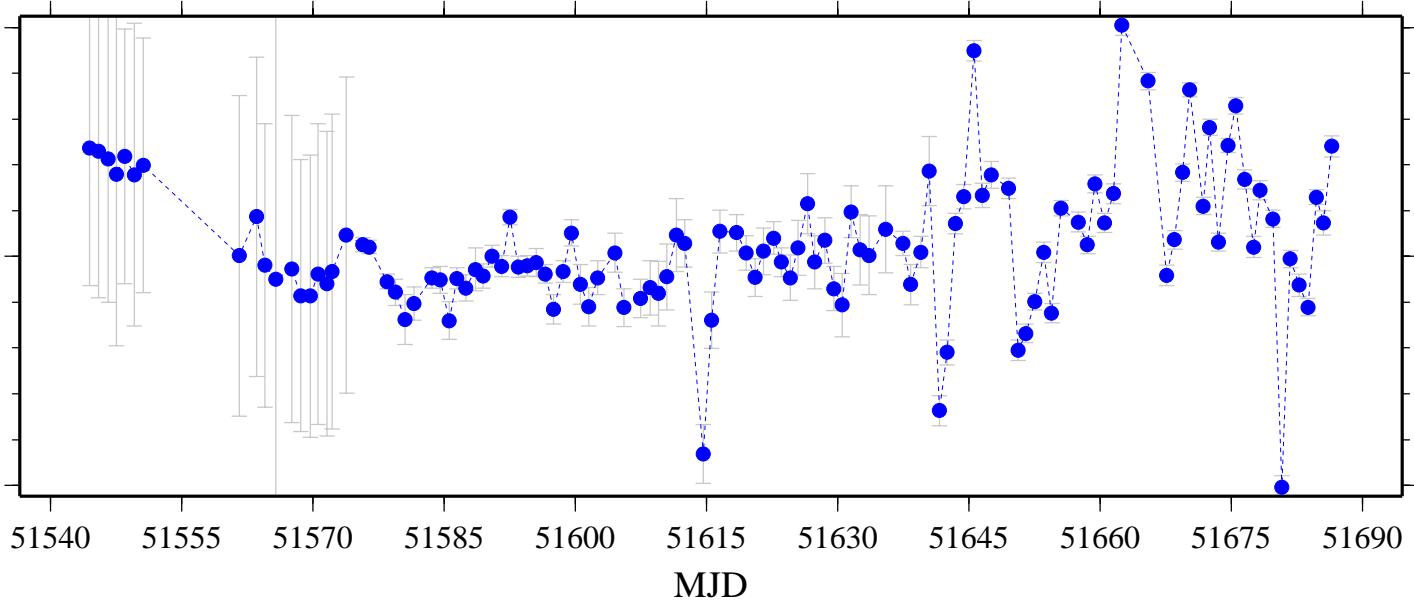
USNO(e)-AMC (TW-CP)

NANOSECONDS



USNO(e)-AMC (CV-CP)

NANOSECONDS



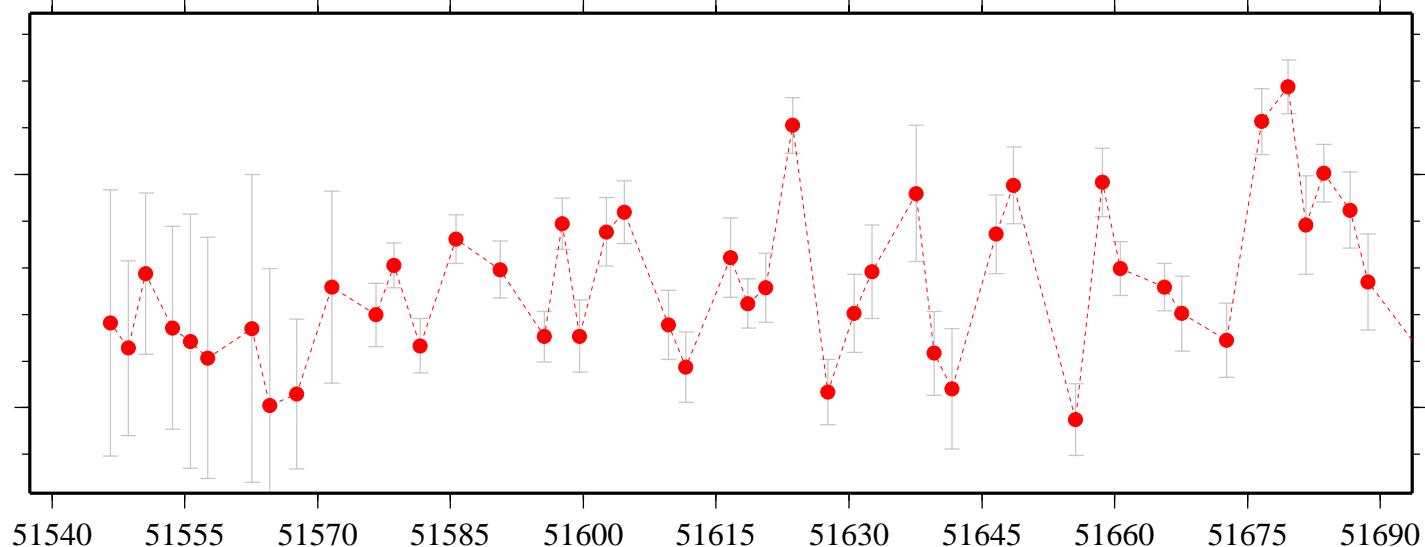
USNO(f) – NPL

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.6098	-1.1	4.7	-93.952		-5.8	92.8	98.6	0.7	1.0	0.010
51666.5000		8.4	-94.551				102.9		0.9	0.008
51667.6097	-0.3	6.9	-93.621		-7.2	93.4	100.5	0.7	1.8	0.004
51668.5000		4.9	-93.966				98.9		1.7	0.007
51669.5000		-3.7	-94.144				90.5		1.4	0.007
51670.5000		4.1	-94.329				98.4		0.9	0.008
51671.5000		4.0	-94.064				98.1		1.5	0.006
51672.6097	-2.2	6.4	-93.609		-8.5	91.5	100.0	0.8	1.7	0.006
51673.5000		-5.0	-93.383				88.4		1.2	0.006
51674.5000		9.5	-93.334				102.8		1.3	0.006
51675.5000		3.4	-93.534				96.9		1.1	0.006
51676.6097	1.0	-1.7	-94.064		2.7	95.1	92.4	1.1	1.3	0.005
51677.5000		1.9	-94.314				96.2		1.7	0.006
51678.5000		1.7	-94.403				96.1		1.3	0.007
51679.6097	-1.5	-6.0	-94.514		4.5	93.0	88.5	1.0	1.0	0.010
51680.5000		1.1	-94.665				95.8		1.5	0.012
51681.6097	0.6	3.2	-95.078		-2.6	95.7	98.3	1.0	2.3	0.007
51682.5000		5.7	-95.020	- 85700.381CP			100.7		1.7	0.005
51683.6097	0.9	0.8	-94.020	+ 85698.457CP	0.1	94.9	94.9	0.9	1.2	0.025
51684.5000		0.1	-93.110				93.2		1.2	0.006
51685.5000		5.0	-92.953				98.0		1.6	0.005
51686.6097	0.9	2.8	-92.724		-1.8	93.7	95.5	1.1	1.6	0.005
51687.5000		1.7							0.9	
51688.6097	1.5	7.0			-5.5			1.5	2.0	
51689.5000		3.6							1.5	
51690.5000		4.1							1.3	
51691.5000		5.2							1.0	
51692.5000		8.1							1.4	
51693.6097	2.5	11.0			-8.5			0.9	1.6	
51694.5000		9.3							1.0	

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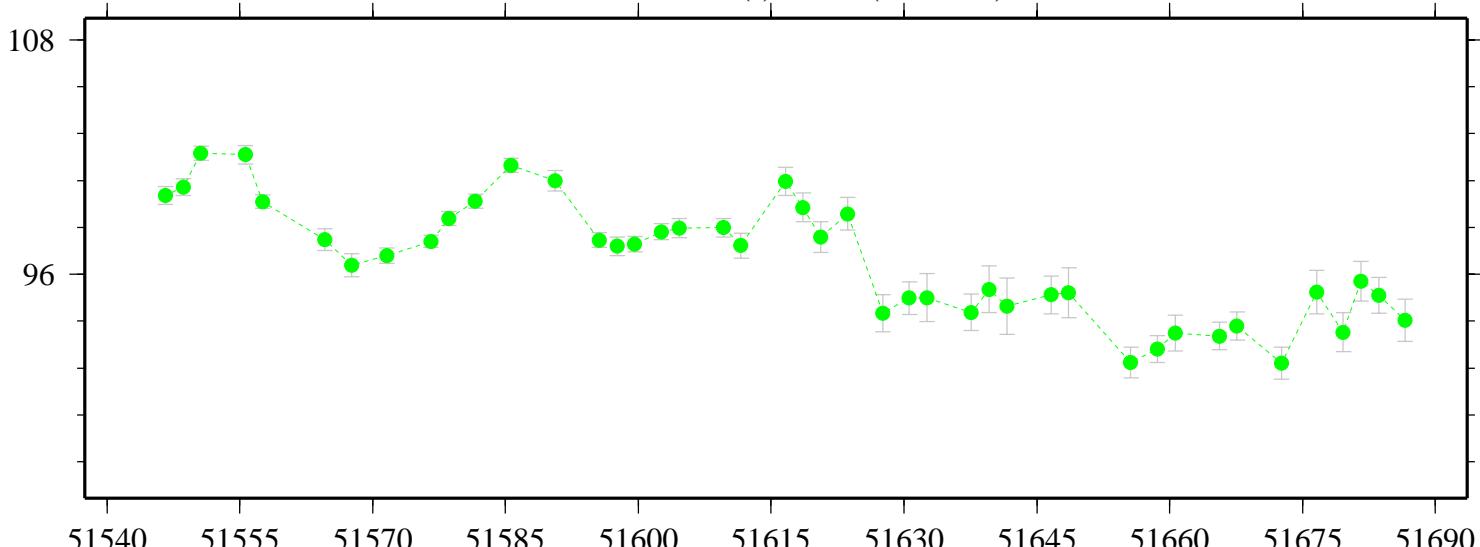
USNO(f)-NPL (TW-CV)

NANOSECONDS



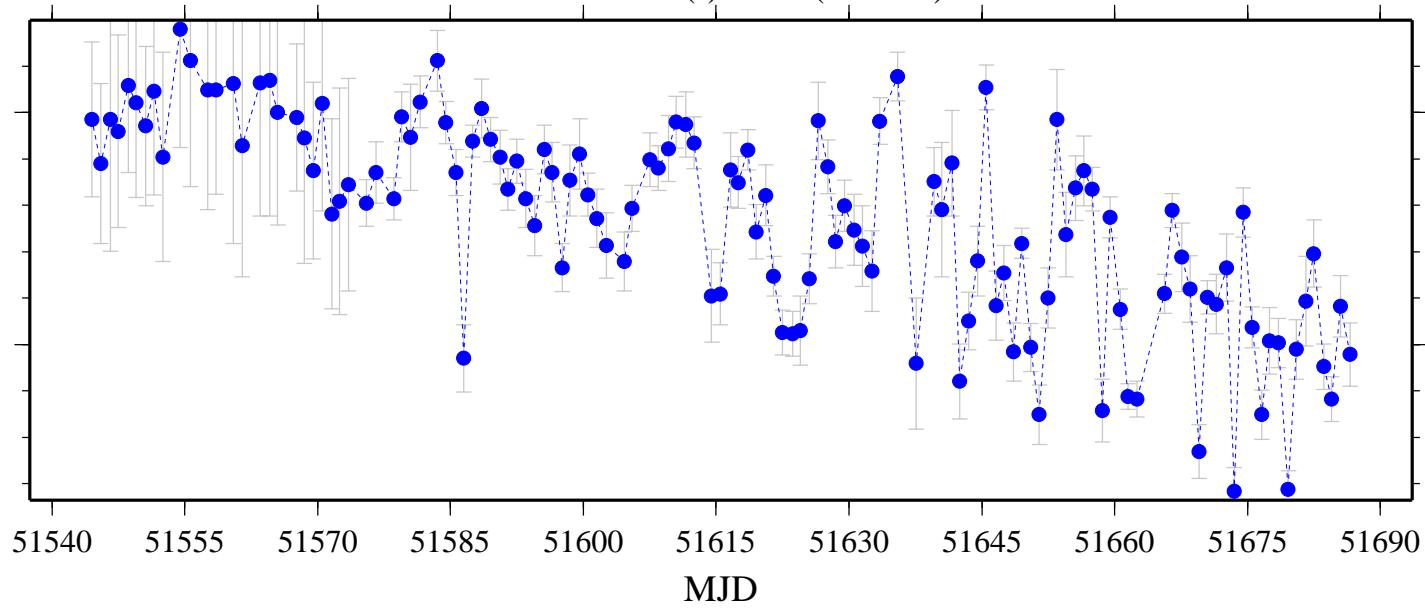
USNO(f)-NPL (TW-CP)

NANOSECONDS



USNO(f)-NPL (CV-CP)

NANOSECONDS



x and y-axes are same scale

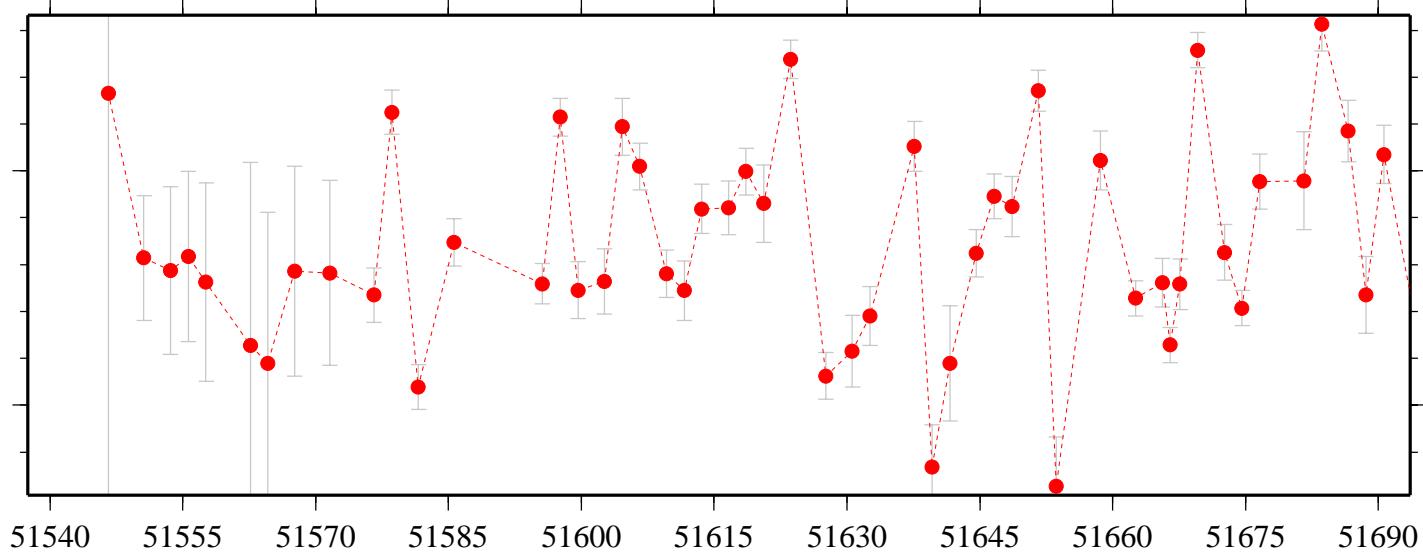
USNO(f) - PTB

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.6524	4.5	10.5	42.512	- 0.171 CP	-6.0	-38.0	-32.0	0.0	1.3	0.027
51666.4785	5.7	15.0	42.683		-9.3	-37.0	-27.7	0.0	0.9	0.018
51667.6160	5.5	11.6	42.735		-6.0	-37.2	-31.2	0.5	1.2	0.016
51668.5000		11.4	41.510				-30.1		1.2	0.022
51669.6160	6.3	-0.1	40.306		6.4	-34.0	-40.4	0.6	0.7	0.026
51670.5000		10.2	39.624				-29.4		1.0	0.018
51671.5000		8.5	39.174				-30.7		0.8	0.019
51672.6160	1.6	6.0			-4.3			0.7	1.3	
51673.5000		-2.4	36.088				-38.5		1.3	0.025
51674.6160	0.6	7.9	36.070		-7.3	-35.5	-28.1	0.6	0.7	0.029
51675.5000		3.3	35.182				-31.9		1.0	0.013
51676.6160	-0.6	-0.1	34.626		-0.6	-35.2	-34.7	0.6	1.3	0.023
51677.5000		1.9	32.358				-30.4		1.6	0.015
51678.5000		1.1	31.558				-30.5		1.2	0.013
51679.5000		-3.8	31.306				-35.1		0.9	0.020
51680.5000		-0.5	31.943				-32.5		1.5	0.017
51681.6160	-0.9	-0.3	31.069		-0.5	-31.9	-31.4	0.6	2.5	0.019
51682.5000		-0.5	31.724				-32.2		1.3	0.033
51683.6160	-0.2	-8.1	30.375		7.8	-30.6	-38.4	0.6	1.3	0.023
51684.5000		-5.0	32.533				-37.6		1.3	0.015
51685.5000		2.5	33.904				-31.4		1.8	0.023
51686.6160	0.5	-1.6	33.476		2.1	-33.0	-35.1	0.7	1.5	0.013
51687.5000		-1.5							1.2	
51688.6160	-3.4	3.2			-6.6			0.6	2.0	
51689.5000		0.4							1.6	
51690.6160	-1.3	-2.2			0.9			0.6	1.5	
51691.5000		-1.7							0.9	
51692.5000		1.3							1.0	
51693.6160	-5.0	1.6			-6.6			0.5	1.3	
51694.5000		0.7							0.8	

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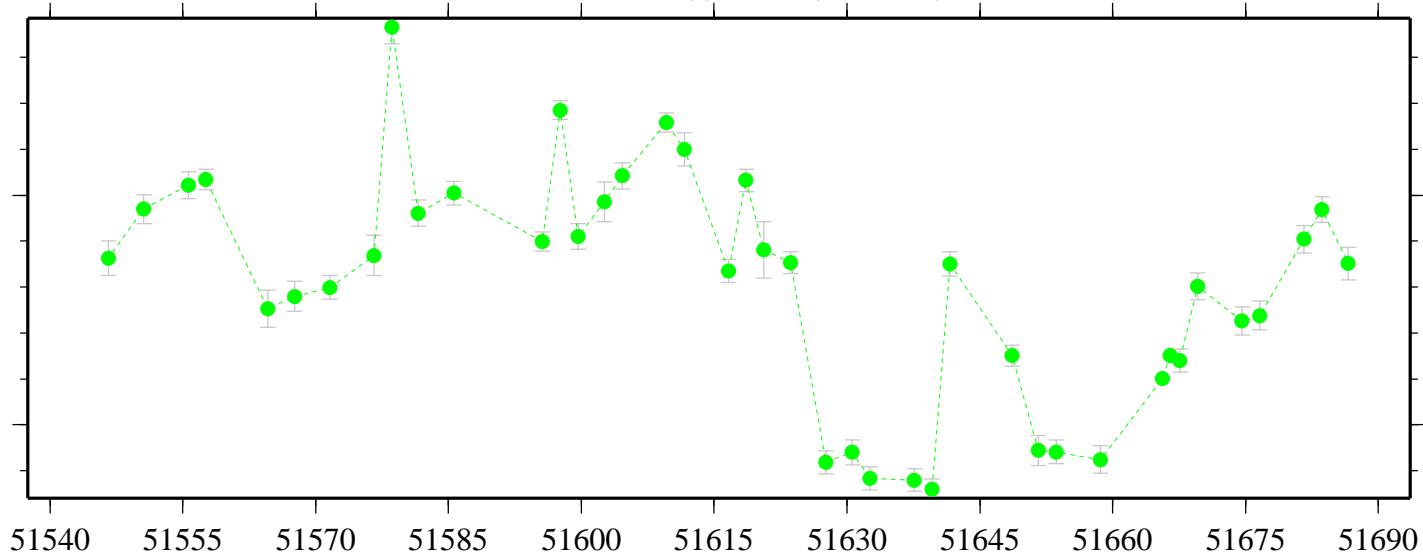
USNO(f)-PTB (TW-CV)

NANOSECONDS



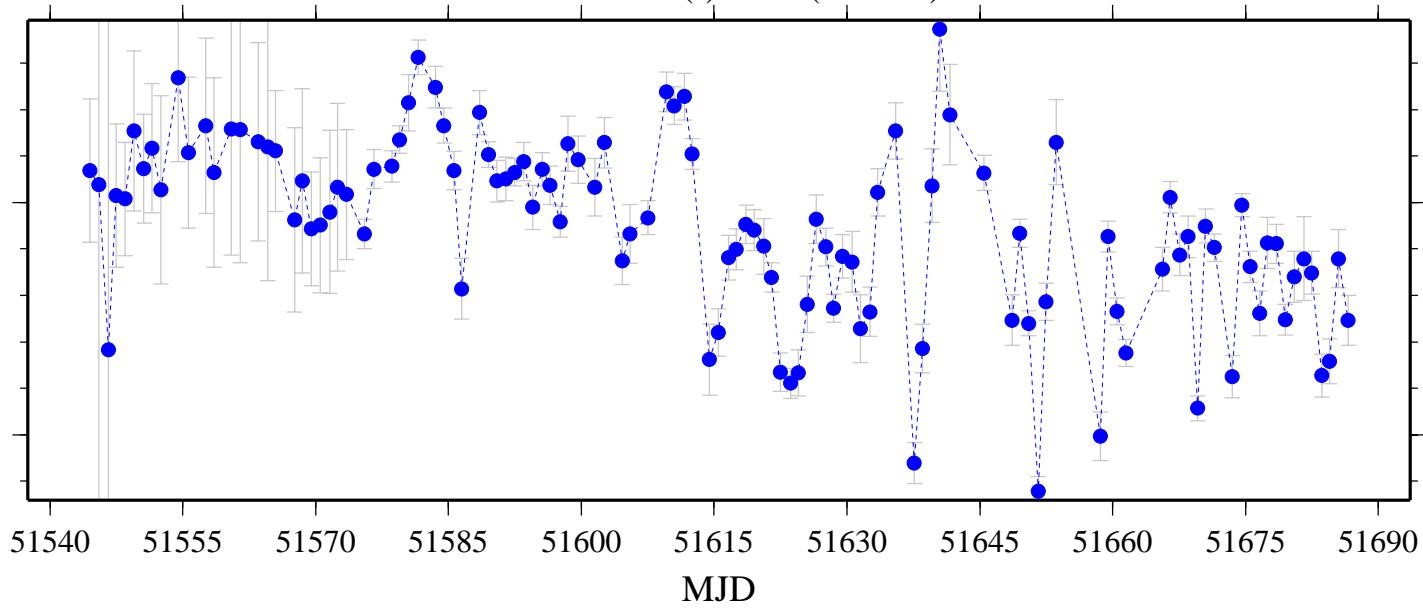
USNO(f)-PTB (TW-CP)

NANOSECONDS



USNO(f)-PTB (CV-CP)

NANOSECONDS



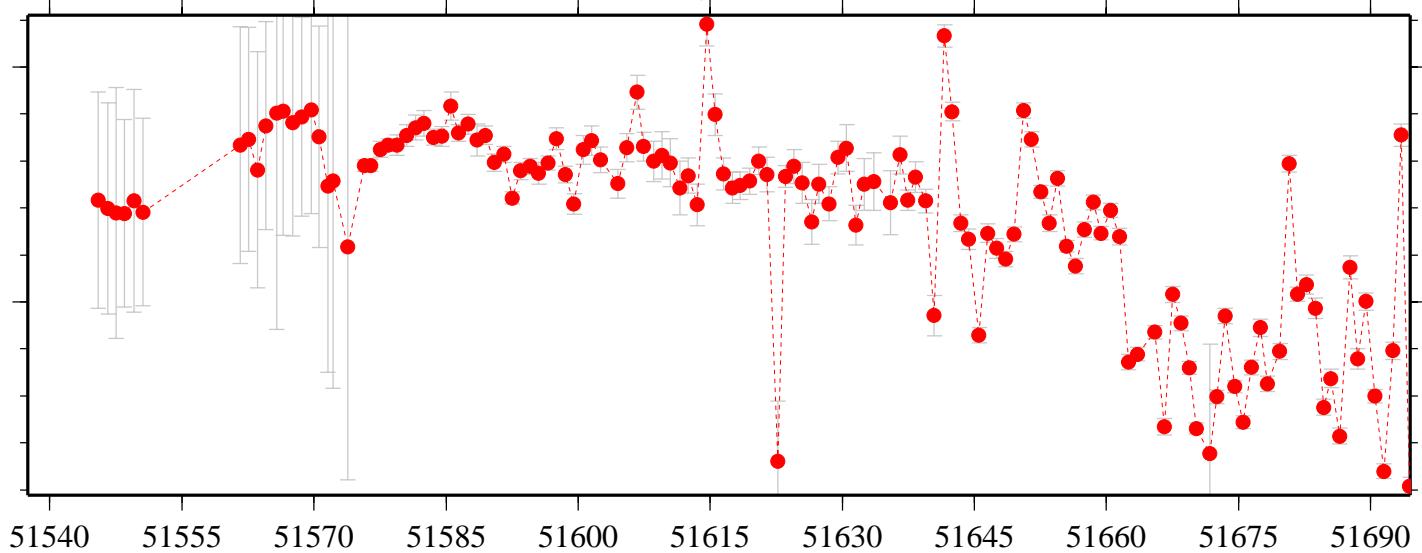
USNO(g) - AMC

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.4719	0.4	-50.7	1.387	+ 4.276CP	51.1	-1.0	-52.1	0.1	0.3	0.053
51666.5768	-0.1	-47.0			46.9			0.2	0.3	
51667.5559	0.5	-52.4	4.364		52.8	-3.9	-56.7	0.1	0.3	0.009
51668.4955	0.4	-51.2	0.326	- 7.768CP	51.5	0.1	-51.5	0.1	0.3	0.130
51669.3889	0.8	-48.7	-6.302	+ 3762.169CP	49.6	7.1	-42.4	0.1	0.3	0.015
51670.2219	1.1	-45.7	-6.750		46.8	7.9	-39.0	0.1	0.2	0.051
51671.7851	-3.8	-49.5	-6.806		45.7	3.0	-42.7	4.9	0.3	0.052
51672.5136	1.3	-46.9	-7.080		48.3	8.4	-39.8	0.2	0.3	0.061
51673.5136	1.3	-50.6	-6.795		51.9	8.1	-43.8	0.2	0.3	0.038
51674.5983	1.6	-47.1	-5.247		48.7	6.8	-41.9	0.1	0.2	0.086
51675.4934	1.5	-45.6	-4.238		47.1	5.7	-41.4	0.1	0.3	0.054
51676.4726	1.4	-48.1	-5.288		49.6	6.7	-42.9	0.1	0.3	0.006
51677.4934	0.9	-50.5	-4.842		51.3	5.7	-45.6	0.2	0.3	0.030
51678.2639	0.5	-48.3	-4.048		48.8	4.6	-44.2	0.2	0.3	0.009
51679.7018	1.6	-48.7	-3.923		50.3	5.5	-44.8	0.2	0.3	0.005
51680.7636	1.7	-57.0	-4.049	- 4497.116CP	58.7	5.7	-52.9	0.1	0.4	0.005
51681.7219	2.0	-50.9			52.8			0.2	0.3	
51682.7017	1.5	-51.8	-4.670		53.3	6.2	-47.1	0.2	0.4	0.028
51683.7639	1.3	-50.9	-3.615		52.2	4.9	-47.3	0.4	0.3	0.031
51684.6802	1.2	-46.6	-2.485		47.8	3.7	-44.1	0.3	0.2	0.008
51685.5146	1.7	-47.3	-1.960		49.1	3.7	-45.4	0.1	0.4	0.022
51686.4729	1.7	-44.8	-1.653		46.5	3.3	-43.2	0.1	0.4	0.006
51687.7011	1.9	-52.2			54.0			0.1	0.5	
51688.5559	2.2	-47.8			49.9			0.1	0.4	
51689.4723	1.6	-50.9			52.5			0.1	0.4	
51690.5136	1.7	-46.6			48.3			0.1	0.3	
51691.5344	0.5	-44.4			44.9			0.2	0.3	
51692.5143	0.6	-49.7			50.3			0.1	0.4	
51693.4927	0.4	-59.5			60.0			0.1	0.5	
51694.4511	0.3	-44.0			44.3			0.2	0.3	

The ADJUSTMENTS column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

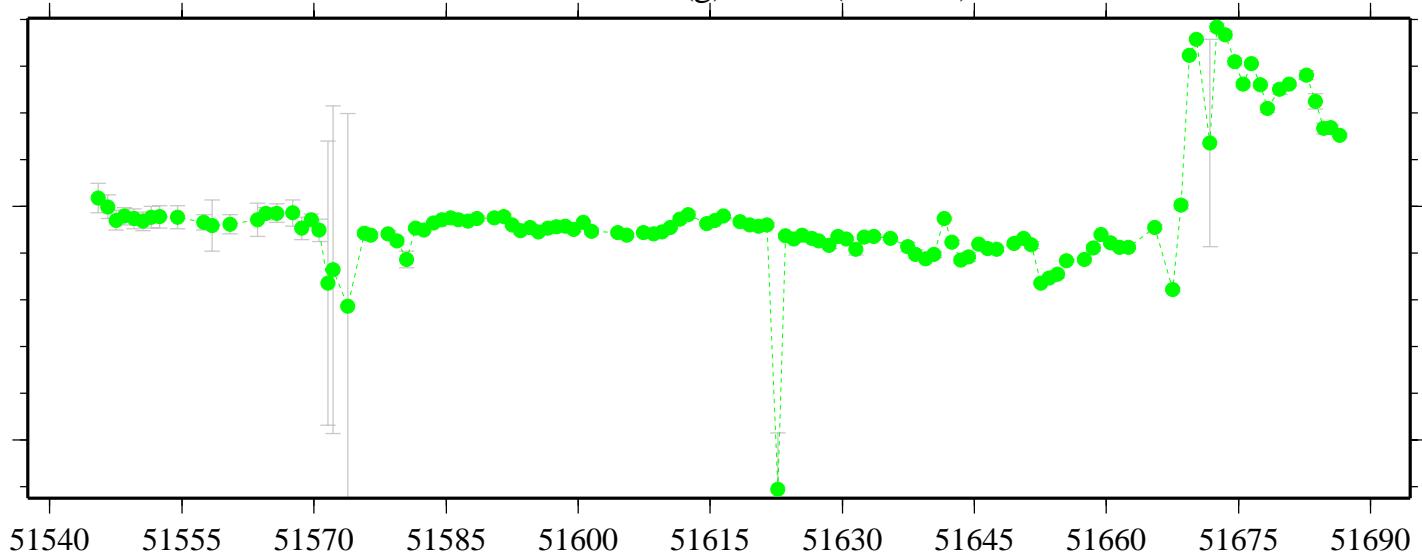
USNO(g)-AMC (TW-CV)

NANOSECONDS



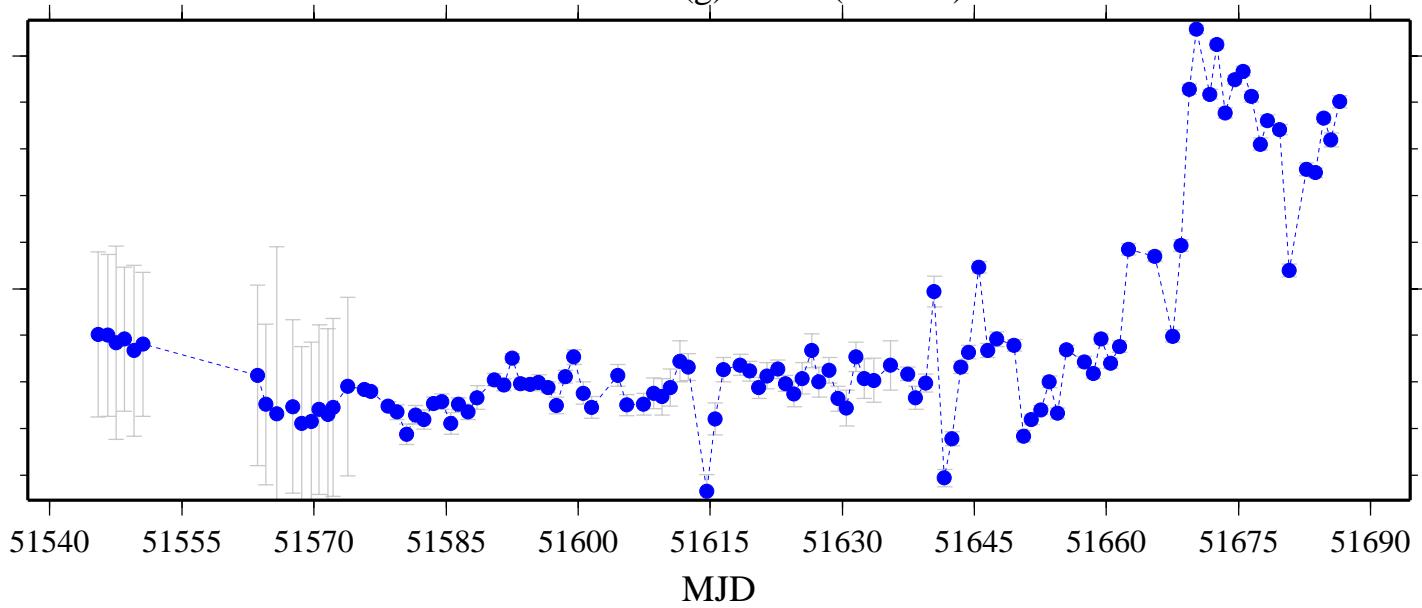
USNO(g)-AMC (TW-CP)

NANOSECONDS



USNO(g)-AMC (CV-CP)

NANOSECONDS



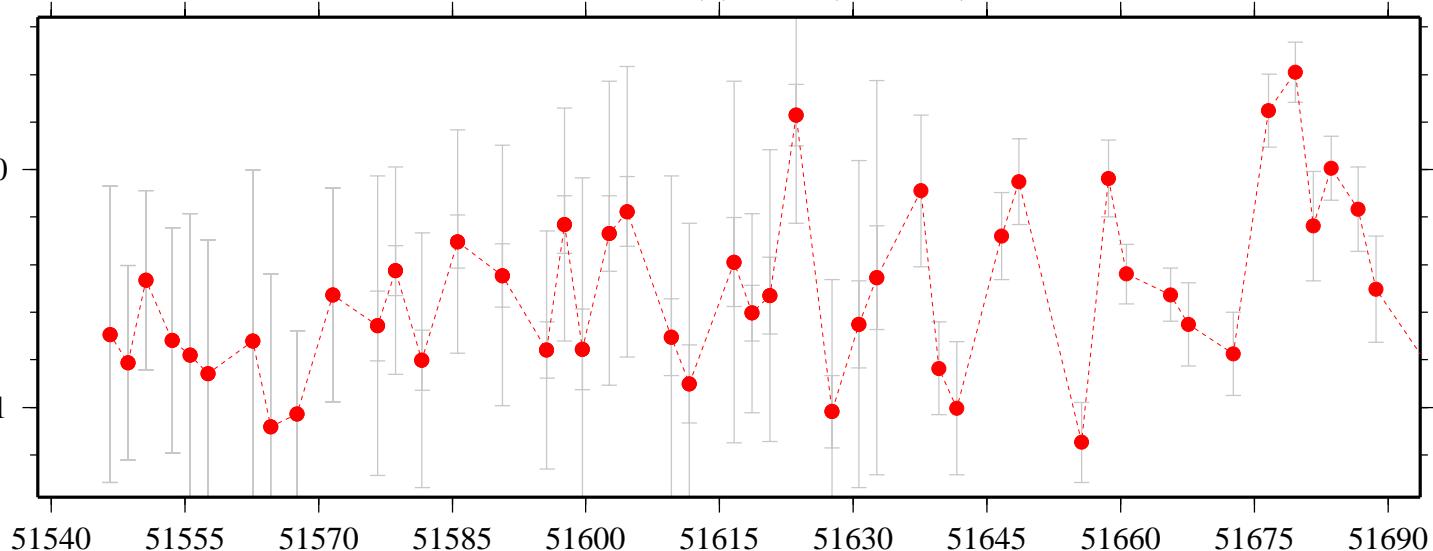
USNO(h) - NPL

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.6098	-1.1	4.7	-95.120		-5.8	94.0	99.8	0.7	1.0	0.016
51666.5000		8.4	-96.443				104.8		0.9	0.011
51667.6097	-0.3	6.9	-96.458		-7.2	96.2	103.3	0.7	1.8	0.011
51668.5000		4.9	-100.668	- 7.683CP			105.6		1.7	0.133
51669.5000		-3.7	-105.834				102.2		1.4	0.028
51670.5000		4.1	-105.920				110.0		0.9	0.048
51671.5000		4.0	-105.588				109.6		1.5	0.056
51672.6097	-2.2	6.4	-105.600		-8.5	103.4	112.0	0.8	1.7	0.063
51673.5000		-5.0	-105.311				100.4		1.2	0.038
51674.5000		9.5	-104.459				114.0		1.3	0.085
51675.5000		3.4	-103.419				106.8		1.1	0.054
51676.6097	1.0	-1.7	-104.810		2.7	105.8	103.1	1.1	1.3	0.007
51677.5000		1.9	-104.588				106.5		1.7	0.030
51678.5000		1.7	-104.244				105.9		1.3	0.012
51679.6097	-1.5	-6.0	-104.695		4.5	103.2	98.7	1.0	1.0	0.010
51680.5000		1.1	-105.803				106.9		1.5	0.039
51681.6097	0.6	3.2			-2.6			1.0	2.3	
51682.5000		5.7	-105.703	- 85700.293CP			111.4		1.7	0.027
51683.6097	0.9	0.8	-104.612	+ 85698.399CP	0.1	105.5	105.4	0.9	1.2	0.032
51684.5000		0.1	-103.405				103.5		1.2	0.010
51685.5000		5.0	-102.916				107.9		1.6	0.023
51686.6097	0.9	2.8	-102.393		-1.8	103.3	105.1	1.1	1.6	0.008
51687.5000		1.7							0.9	
51688.6097	1.5	7.0			-5.5			1.5	2.0	
51689.5000		3.6							1.5	
51690.5000		4.1							1.3	
51691.5000		5.2							1.0	
51692.5000		8.1							1.4	
51693.6097	2.5	11.0			-8.5			0.9	1.6	
51694.5000		9.3							1.0	

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

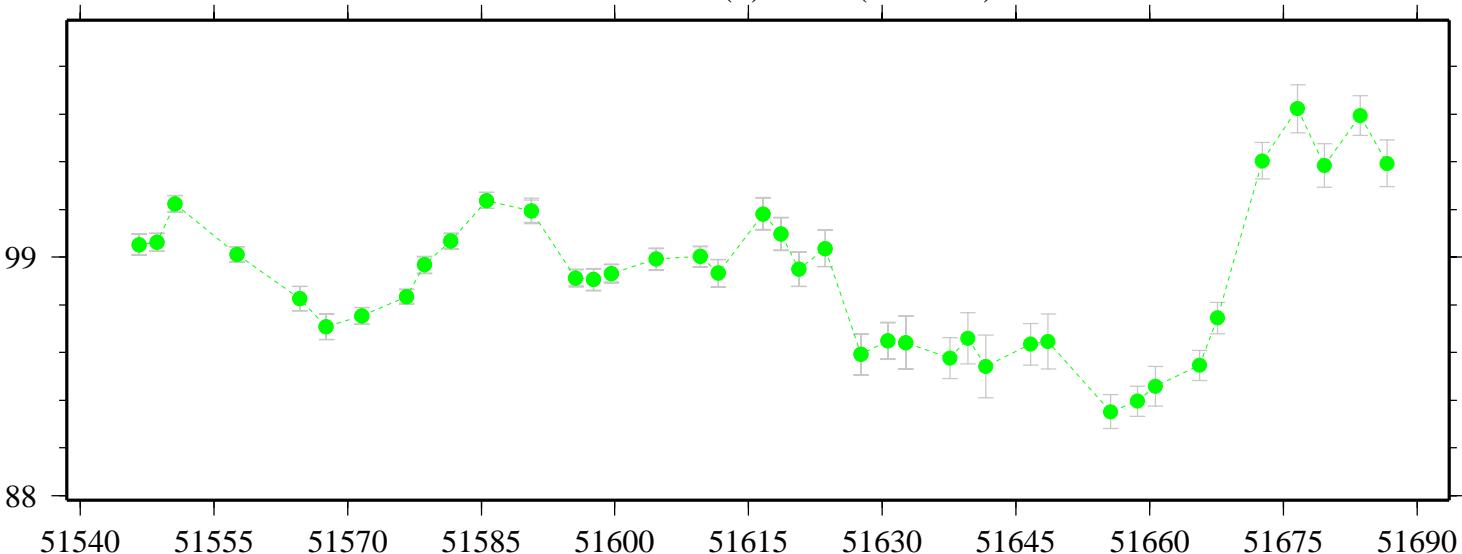
USNO(h)-NPL (TW-CV)

NANOSECONDS



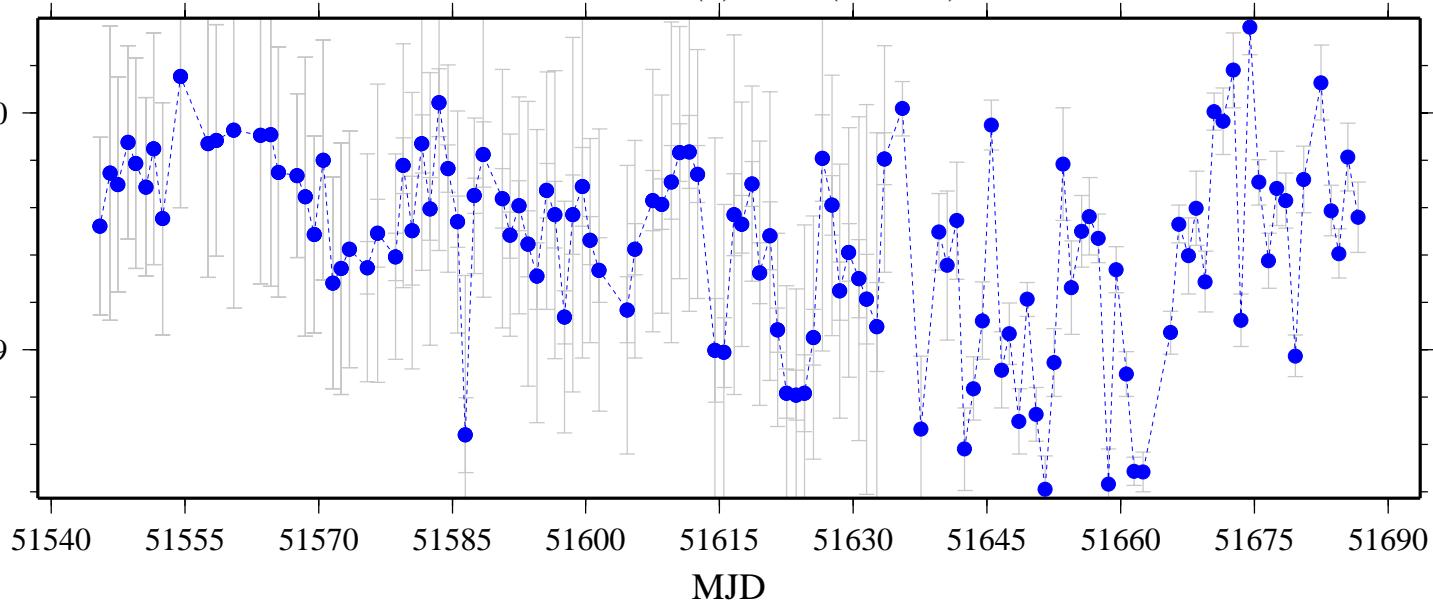
USNO(h)-NPL (TW-CP)

NANOSECONDS



USNO(h)-NPL (CV-CP)

NANOSECONDS



x and y-axes are same scale

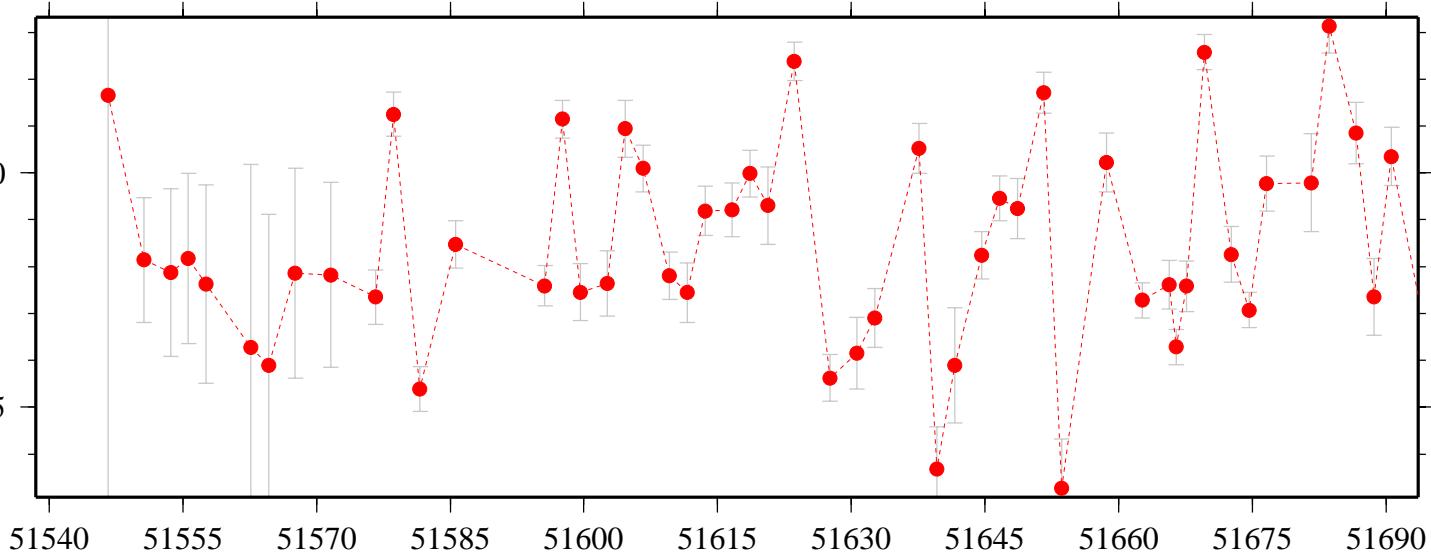
USNO(h) - PTB

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51665.6524	4.5	10.5	37.800	- 2.573 _{CP}	-6.0	-33.3	-27.3	0.0	1.3	0.033
51666.4785	5.7	15.0	37.288		-9.3	-31.6	-22.3	0.0	0.9	0.020
51667.6160	5.5	11.6	36.026		-6.0	-30.5	-24.4	0.5	1.2	0.024
51668.5000		11.4	31.387	- 7.412 _{CP}			-19.9		1.2	0.142
51669.6160	6.3	-0.1	25.502		6.4	-19.2	-25.6	0.6	0.7	0.039
51670.5000		10.2	24.782				-14.6		1.0	0.042
51671.5000		8.5	24.404				-15.9		0.8	0.053
51672.6160	1.6	6.0			-4.3			0.7	1.3	
51673.5000		-2.4	20.909				-23.3		1.3	0.044
51674.6160	0.6	7.9	22.206		-7.3	-21.6	-14.3	0.6	0.7	0.078
51675.5000		3.3	22.048				-18.7		1.0	0.052
51676.6160	-0.6	-0.1	20.636		-0.6	-21.3	-20.7	0.6	1.3	0.026
51677.5000		1.9	18.836				-16.9		1.6	0.034
51678.5000		1.1	18.468				-17.4		1.2	0.014
51679.5000		-3.8	17.906				-21.7		0.9	0.021
51680.5000		-0.5	17.562				-18.1		1.5	0.041
51681.6160	-0.9	-0.3			-0.5			0.6	2.5	
51682.5000		-0.5	17.761				-18.3		1.3	0.027
51683.6160	-0.2	-8.1	16.485		7.8	-16.7	-24.5	0.6	1.3	0.042
51684.5000		-5.0	18.961				-24.0		1.3	0.020
51685.5000		2.5	20.663				-18.1		1.8	0.036
51686.6160	0.5	-1.6	20.529		2.1	-20.0	-22.2	0.7	1.5	0.016
51687.5000		-1.5							1.2	
51688.6160	-3.4	3.2			-6.6			0.6	2.0	
51689.5000		0.4							1.6	
51690.6160	-1.3	-2.2			0.9			0.6	1.5	
51691.5000		-1.7							0.9	
51692.5000		1.3							1.0	
51693.6160	-5.0	1.6			-6.6			0.5	1.3	
51694.5000		0.7							0.8	

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

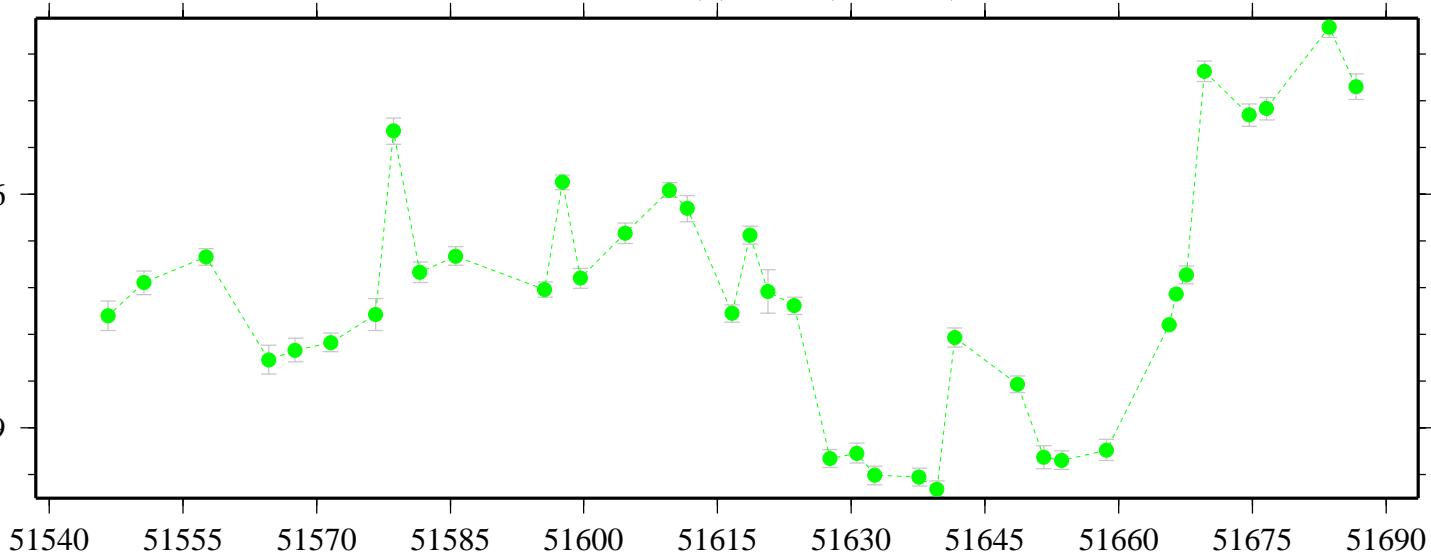
USNO(h)-PTB (TW-CV)

NANOSECONDS



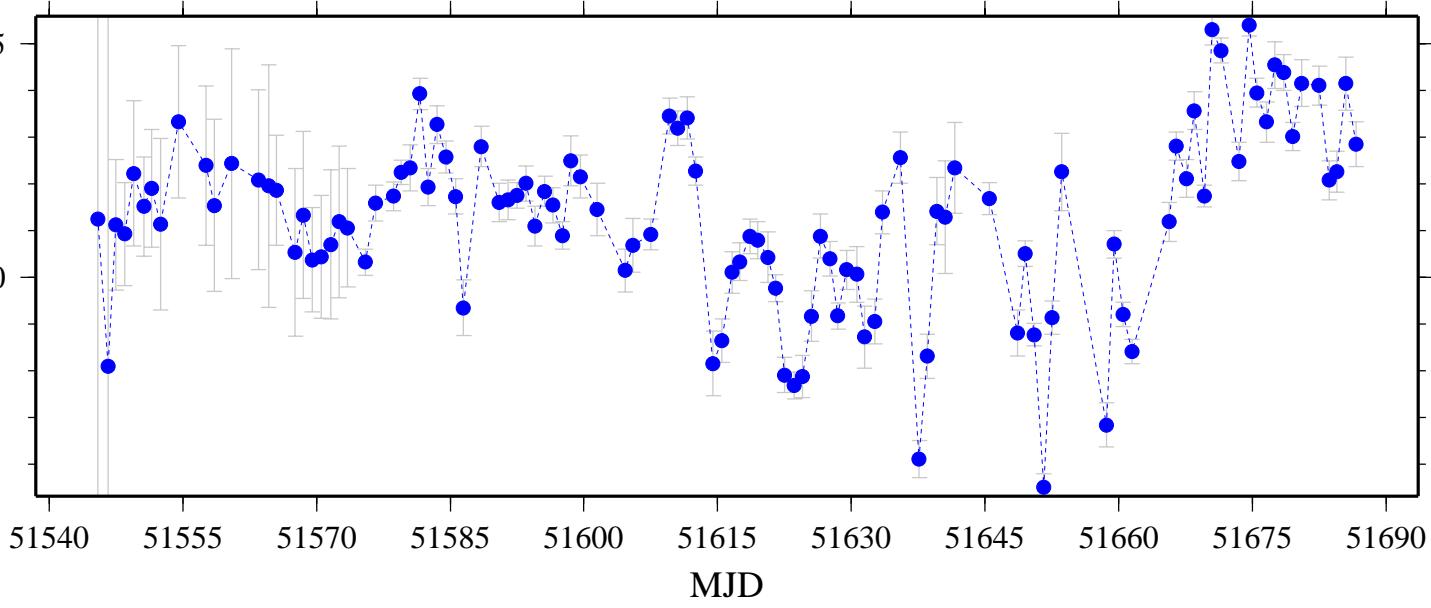
USNO(h)-PTB (TW-CP)

NANOSECONDS



USNO(h)-PTB (CV-CP)

NANOSECONDS



AMC	Receiver System Hardware Information:
TW	<p>modem model: AOATWT-1000 antenna: 1.8m-VSAT reference standard name: UTC(USNOAMC(MC1)) reference standard type: H-MASER(steered)</p> <p>LOGS:</p> <p>NOTES:</p>
CV	<p>receiver name (local): AOA2 SN113 receiver model: AOA-TTR4P antenna: XXX reference standard name: UTC(USNOAMC(MC1)) reference standard type: H-MASER(steered)</p> <p>LOGS:</p> <p>AOA2 calibration history:</p> <p>NOTES: Receiver not calibrated.</p>
CP	<p>receiver name (local): AMC2 receiver model: AOA SNR-12 ACT antenna: AOAD-M_T reference standard name: UTC(USNOAMC(MC1)) reference standard type: steered H-MASER</p> <p>LOGS:</p> <p>51687 05-May-00 receiver stopped tracking at 00:00; restarted at 16:24 51693 16-May-00 receiver stopped tracking at 00:20; restarted at 13:00</p> <p>NOTES:</p> <p>This is an IGS station (AMC2).</p>

NPL	Receiver System Hardware Information:
TW	<p>modem model: SATRE antenna: 1.8m-VSAT reference standard name: UTC(NPL) reference standard type: H-MASER</p> <p><u>LOGS:</u></p> <p><u>NOTES:</u></p>
CV	<p>receiver name (local): xxx SN276 receiver model: AOA-TTR5A antenna: XXX reference standard name: UTC(NPL) reference standard type: H-MASER</p> <p><u>LOGS:</u></p> <p><u>NOTES:</u></p> <p>This receiver system has an arbitrary fixed offset from UTC(NPL) which has not been measured.</p>
CP	<p>receiver name (local): NPLB receiver model: Ashtech Z-XII3 antenna: ASH700718B reference standard name: UTC(NPL) reference standard type: H-MASER</p> <p><u>LOGS:</u></p> <p><u>NOTES:</u></p> <p>This receiver system has a fixed offset of UTC(NPL)-1pps_input = (8441+/-1)ns, subject to temperature variations on the 200m cable joining two buildings.</p>

PTB	Receiver System Hardware Information:
TW	<p>modem model: SATRE antenna: 1.8m-VSAT reference standard name: UTC(PTB) reference standard type: CESIUM(steered)</p> <p><u>LOGS:</u></p> <p><u>NOTES:</u></p>
CV	<p>receiver name (local): xxx xxx receiver model: AOA-TTR5 antenna: XXX reference standard name: UTC(PTB) reference standard type: CESIUM(steered)</p> <p><u>LOGS:</u></p> <p><u>NOTES:</u></p>
CP	<p>receiver name (local): PTBA receiver model: modified Ashtech Z-12T GeTT terminal antenna: choke-ring reference standard name: H2 reference standard type: H-MASER</p> <p><u>LOGS:</u></p> <p><u>NOTES:</u></p> <p>This is a GeTT receiver. CP clock estimates at PTB are referenced to UTC(PTB) using data from an SRS620 time interval counter.</p>

USNO(a)	Receiver System Hardware Information:
TW	<p>modem model: EACS-TWSTT-2000(sn#103) antenna: 4.6m-steerable-vertex reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p> <p>LOGS:</p> <p>NOTES:</p>
CV	<p>receiver name (local): AOA1 SN12 receiver model: AOA-TTR4P antenna: XXX reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p> <p>LOGS:</p> <p>AOA1 calibration history:</p> <p>NOTES: Receiver not calibrated.</p>
CP	<p>receiver name (local): USNO receiver model: AOA SNR-12 ACT antenna: AOAD-M_T reference standard name: UTC(USNO(MC3)) reference standard type: steered H-MASER</p> <p>LOGS:</p> <p>NOTES: CP clock estimates are referenced to UTC(USNO(MC2)) using data from an optic fiber link.</p>

USNO(b)	Receiver System Hardware Information:
TW	<p>modem model: Mitrex-2500(sn#85006) antenna: 4.6m-steerable-vertex reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p>
	<p><u>LOGS:</u></p> <p><u>NOTES:</u></p>
CV	<p>receiver name (local): TTR1 SN440 receiver model: AOA-TTR6 antenna: xxx reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p>
	<p><u>LOGS:</u></p> <p>TTR1 calibration history: TTR1(SN440) delay change on MJD 50566 (04/28/97): Internal=68 TTR1(SN440) delay change on MJD 50973 (06/09/98): Internal=67 TTR1(SN440) delay change on MJD 51135 (11/18/98): Internal=68 TTR1(SN440) delay change on MJD 51260 (03/23/99): Internal=67</p> <p><u>NOTES:</u> This is the primary USNO SPS receiver.</p>
CP	<p>receiver name (local): USNO receiver model: AOA SNR-12 ACT antenna: AOAD-M_T reference standard name: UTC(USNO(MC3)) reference standard type: steered H-MASER</p>
	<p><u>LOGS:</u></p> <p><u>NOTES:</u></p> <p>CP clock estimates are referenced to UTC(USNO(MC2)) using data from an optic fiber link.</p>

USNO(c)	Receiver System Hardware Information:
TW	<p>modem model: EACS-TWSTT-2000(sn#103) antenna: 4.6m-steerable-vertex reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p> <p><u>LOGS:</u></p> <p><u>NOTES:</u></p>
CV	<p>receiver name (local): AOA1 SNxxx receiver model: AOA-TTR4P antenna: XXX reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p> <p><u>LOGS:</u></p> <p>AOA1 calibration history:</p> <p><u>NOTES:</u> Receiver not calibrated.</p>
CP	<p>receiver name (local): USNB receiver model: modified Ashtech Z-12T GeTT terminal antenna: reference standard name: UTC(USNO(MC2)) reference standard type: steered H-MASER</p> <p><u>LOGS:</u></p> <p><u>NOTES:</u> This is a GeTT receiver.</p>

USNO(d)	Receiver System Hardware Information:
TW	<p>modem model: Mitrex-2500(sn#85006) antenna: 4.6m-steerable-vertex reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steeded)</p>
	<p><u>LOGS:</u></p> <p><u>NOTES:</u></p>
CV	<p>receiver name (local): TTR1 SN440 receiver model: AOA-TTR6 antenna: xxx reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steeded)</p>
	<p><u>LOGS:</u></p> <p>TTR1 calibration history: TTR1(SN440) delay change on MJD 50566 (04/28/97): Internal=68 TTR1(SN440) delay change on MJD 50973 (06/09/98): Internal=67 TTR1(SN440) delay change on MJD 51135 (11/18/98): Internal=68 TTR1(SN440) delay change on MJD 51260 (03/23/99): Internal=67</p> <p><u>NOTES:</u> This is the primary USNO SPS receiver.</p>
CP	<p>receiver name (local): USNB receiver model: modified Ashtech Z-12T GeTT terminal antenna: reference standard name: UTC(USNO(MC2)) reference standard type: steered H-MASER</p>
	<p><u>LOGS:</u></p> <p><u>NOTES:</u> This is a GeTT receiver.</p>

USNO(e)	Receiver System Hardware Information:
TW	<p>modem model: EACS-TWSTT-2000(sn#103) antenna: 4.6m-steerable-vertex reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p> <p>LOGS:</p> <p>NOTES:</p>
CV	<p>receiver name (local): AOA1 SNxxx receiver model: AOA-TTR4P antenna: XXX reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p> <p>LOGS:</p> <p>AOA1 calibration history:</p> <p>NOTES: Receiver not calibrated.</p>
CP	<p>receiver name (local): NIM1 receiver model: Ashtech Z-12 antenna: Geodetic 3 reference standard name: UTC(USNO(MC2)) reference standard type: steered H-MASER</p> <p>LOGS:</p> <p>NOTES:</p> <p>This receiver is owned by the National Imagery and Mapping Agency (NIMA)</p>

USNO(f)	Receiver System Hardware Information:
TW	<p>modem model: Mitrex-2500(sn#85006) antenna: 4.6m-steerable-vertex reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p> <p><u>LOGS:</u></p> <p><u>NOTES:</u></p>
CV	<p>receiver name (local): TTR1 SN440 receiver model: AOA-TTR6 antenna: XXX reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p> <p><u>LOGS:</u></p> <p>TTR1 calibration history: TTR1(SN440) delay change on MJD 50566 (04/28/97): Internal=68 TTR1(SN440) delay change on MJD 50973 (06/09/98): Internal=67 TTR1(SN440) delay change on MJD 51135 (11/18/98): Internal=68 TTR1(SN440) delay change on MJD 51260 (03/23/99): Internal=67</p> <p><u>NOTES:</u> This is the primary USNO SPS receiver.</p>
CP	<p>receiver name (local): NIM1 receiver model: Ashtech Z-12 antenna: Geodetic 3 reference standard name: UTC(USNO(MC2)) reference standard type: steered H-MASER</p> <p><u>LOGS:</u></p> <p><u>NOTES:</u></p> <p>This receiver is owned by the National Imagery and Mapping Agency (NIMA)</p>

USNO(g)	Receiver System Hardware Information:
TW	<p>modem model: EACS-TWSTT-2000(sn#103) antenna: 4.6m-steerable-vertex reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p> <p>LOGS:</p> <p>NOTES:</p>
CV	<p>receiver name (local): AOA1 SNxxx receiver model: AOA-TTR4P antenna: XXX reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p> <p>LOGS:</p> <p>AOA1 calibration history:</p> <p>NOTES: Receiver not calibrated.</p>
CP	<p>receiver name (local): NIM2 receiver model: Ashtech Z-12 antenna: Geodetic 3 reference standard name: UTC(USNO(MC2)) reference standard type: steered H-MASER</p> <p>LOGS:</p> <p>NOTES:</p> <p>This receiver is owned by the National Imagery and Mapping Agency (NIMA)</p>

USNO(h)	Receiver System Hardware Information:
TW	<p>modem model: Mitrex-2500(sn#85006) antenna: 4.6m-steerable-vertex reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p>
	<p><u>LOGS:</u></p> <p><u>NOTES:</u></p>
CV	<p>receiver name (local): TTR1 SN440 receiver model: AOA-TTR6 antenna: xxx reference standard name: UTC(USNO(MC2)) reference standard type: H-MASER(steered)</p>
	<p><u>LOGS:</u></p> <p>TTR1 calibration history: TTR1(SN440) delay change on MJD 50566 (04/28/97): Internal=68 TTR1(SN440) delay change on MJD 50973 (06/09/98): Internal=67 TTR1(SN440) delay change on MJD 51135 (11/18/98): Internal=68 TTR1(SN440) delay change on MJD 51260 (03/23/99): Internal=67</p> <p><u>NOTES:</u> This is the primary USNO SPS receiver.</p>
CP	<p>receiver name (local): NIM2 receiver model: Ashtech Z-12 antenna: Geodetic 3 reference standard name: UTC(USNO(MC2)) reference standard type: steered H-MASER</p>
	<p><u>LOGS:</u></p> <p><u>NOTES:</u></p> <p>This receiver is owned by the National Imagery and Mapping Agency (NIMA)</p>